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# AGROSTAN

## A Case Study for the 1970 World Census of Agriculture

## UNIT I. DESCRIPTION OF COUNTRY AND ITS CENSUS OBJECTIVES


Prepared under the auspices of the Agency for International Development, U. S. Department of State, as a contribution to the War on Hunger Program.

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BUREAU OF THE CENSUS, A. Ross Eckler, Director

AGROSTAN: A Case Study for the 1970 World Census of Agriculture

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# Chapter I - 1. STATISTICAL OBJECTIVES TO BE MET THROUGH THE 1970 CENSUS OF AGRICULTURE

## 1. INTRODUCTION

Statistics had their origin many generations ago in the counting of men and animals and in the measurement of land and crops produced, for purposes of program planning and administration. The data needs which the 1970 World Census Program proposes to meet are quite similar. The problems being faced today are not new. It is their scope and complexity that has changed. The world food problem, in particular, has become more acute as a result of two factors. First, the number of people in the world is increasing at a rate that points to a doubling of the present world population by the end of this century. Secondly, this is occurring at a time when the area of new land suitable for cultivation is rapidly diminishing.[1]

### 1.1 Statistics and the War on Hunger

A recent report of a Panel on the World Food Supply describes the world's increasingly serious nutritional problem as arising from the uneven distribution of the food supply among countries, within countries, and among families with different levels of income. Global statistical surveys, based on total food per person, suggest that there is no world-wide shortage of food in terms of quantity (calories) or quality (protein) at this time. However, the Panel points to overwhelming clinical evidence of undernutrition and malnutrition among people in the developing countries. Millions of individuals have diets which are nutritionally inadequate according to minimum standards of the Food and Agriculture Organization of the United Nations (FAO). The Panel concludes that "the scale, severity, and duration of the world food problem are so great that a massive, long-range, innovative effort unprecedented in human history will be required to master it."[2]

As the world looks more and more to rising yields to meet increased food needs, capital input requirements will increase as they are substituted for land. This means more multiple cropping, greater use of fertilizer, improved seeds, increased application of pesticides, and use of more irrigated land. The 1970 World Census of Agriculture Program is designed to provide basic statistics, as well as the statistical framework, needed to assist national and international agencies in their plans and efforts to meet food and agricultural production requirements.

### 1.2 Broad goals of FAO programs

In sponsoring the 1970 World Census Program, the countries which have joined together as members of the Food and Agriculture Organization of the United Nations have recognized the importance of agricultural statistics in carrying out its various purposes. Since its organization in 1945, FAO has been working toward the fulfillment of four broad goals:

(1) To raise levels of nutrition

(2) To improve the production and distribution of food and other agricultural products

(3) To better the general living conditions of rural populations

(4) To thereby contribute toward an expanding world economy and insure humanity's freedom

[1] Brown, Lester R. Man, Land, and Food. Washington, D.C., U.S. Department of Agriculture, 1963.

[2] President's Science Advisory Committee. The World Food Problem: Report of the Panel on the World Food Supply. Vol. I., The White House, Washington, D. C., May, 1967.

from hunger.[3]

FAO is the major organization of the United Nations devoted to agriculture. Its program covers the entire field of agriculture, fisheries, forestry, and nutrition and is designed to provide statistical, technical, and economic information, as well as international consultation and technical assistance. The Organization is currently sponsoring more than 1,000 technical assistance projects of limited financial scope, operating in some 80 countries. It sponsors over 300 special fund projects involving major financing from the United Nations Development Fund. FAO also carries out field programs with funds provided by governments and organizations to the Freedom from Hunger Campaign, by United Nations Children's Fund (UNICEF), and by several governments which support training activities and associate-expert schemes. In addition, the UN/FAO World Food Program uses multilateral food aid to assist economic development.[4]

### *1.3 Role of other international organizations*

The World Bank and regional development banks have been giving increased attention to the need for greater investment in agriculture as an essential part of economic development. Other United Nations activities relating to agriculture include matters involving trade problems in the UN Conference on Trade and Development (UNCTAD); agricultural labor in the International Labor Organization (ILO); health aspects of nutrition in the World Health Organization (WHO); education in the UN Educational, Scientific and Cultural Organization (UNESCO); and industrial development in the UN Industrial Development Organization (UNIDO).

Outside of the UN are a number of international organizations that are concerned with various aspects of agriculture. These include the Organization for Economic Cooperation and Development (OECD) through its Committee for Agriculture and its Development Assistance Committee; the Organization of American States (OAS); the Caribbean Organization; and the South Pacific Commission. There are also various organizations concerned with commodities, including the International Cotton Advisory Committee, the International Sugar Council; the International Wheat Council; the International Wool Study Group; and the International Seed Testing Association. Each of these is contributing to improved international understanding and to improving the production, distribution, and use of agricultural products.[5]

### *1.4 Indicative World Plan for Agricultural Development*

As an outgrowth of discussions at the First World Food Congress in 1963, FAO was asked to investigate the requirements for agricultural development, food production, and the directions in which nations and regions should work in meeting needs in a world framework. A plan of action was to be developed, projecting needs over a 20-year span. The governing conference of FAO members proceeded to draft a preliminary plan, which was provisionally approved at the 1965 FAO Conference, subject to further review by member governments and presentation before the Second World Food Congress planned for 1969.

The Indicative World Plan for Agricultural Development, as the plan has been named, has as its basic aim the finding of a solution to the problems of food shortage likely to face the world over the next two decades. The Plan is intended to provide a frame which would help governments to formulate and implement their agricultural policies. It would also provide a focus for FAO's operational activities, and a guide for both recipient and donor countries and organizations with respect to international aid. As the title of the Plan makes clear, it is intended to "indicate" rather than to dictate. Two target dates were set, the first for

[3] Food and Agriculture Organization of the United Nations. Program for the 1970 World Census of Agriculture. Rome, 1965.

[4] Phillips, Ralph W. The Role of International Organizations in Improving Agricultural Production and Food Use. Washington, D.C., International Agricultural Development, U.S. Department of Agriculture, January 1968.

[5] See footnote 4.

1975 and the second for 1985.[6]

### 1.5 *World agricultural projections - 1975 and 1985*

FAO, under terms of reference provided by the Twelfth and Thirteenth Sessions of its governing Conference, has prepared commodity projections for 1975 and 1985. These update the 1970 projections, prepared in 1962. The revised projections provide starting points for the Indicative World Plan for Agricultural Development, with the following objectives:

(1) Provide an integrated view of the current trends and future prospects for world agricultural commodity markets in the context of world economic development.

(2) Provide a basis for assessing the role of agricultural commodity production and trade in economic development, especially in developing regions.

(3) Provide a basis for assessing the impact of current trends in production and demand on the prospective world food situation.

(4) Provide an analysis of commodity trends to assist governments in development planning and diversification policies.

(5) Help to identify the major issues in international trade in agricultural commodities on the basis of current production and trade policies.

In making the projections, FAO has recognized that the two main factors influencing demand are the growth of population and income. Implications of two separate assumptions regarding the pace of economic development are studied: (a) a pessimistic one which assumes no improvement on past economic growth rates in developing countries; and (b) an optimistic one which assumes for these countries an improvement on the past, from a recorded growth rate of about 4 percent in the early sixties, to 5.5 percent in the years 1965 to 1975, and 6 percent during the period 1975 to 1985. Demand, supply, and trade prospects are studied for the years up to 1975, while only demand for food is considered in the projections to 1985.[7]

[6] Pawley, W. H. Horizon 1985. (In: FAO Review. Rome, Jan.-Feb. 1968.)

[7] Food and Agriculture Organization of the United Nations. Agricultural Commodities - Projections for 1975 and 1985. Vol. I. Rome, 1967.

### 1.6 *National goals*

As important as the roles of the international agencies are in the war on hunger, they are small in comparison with the tasks that individual nations must assume. Although the role of high-income countries is important, particularly regarding trade and aid, the major emphasis in the Indicative World Plan is being placed on ways and means of increasing agricultural production in developing countries. Agriculture is the predominant sector in almost all of the developing countries. In these countries, 60 to 85 percent of the population live on the land and derive their livelihood from it. Agriculture must provide much of the raw materials, investment capital, foreign exchange, and manpower needed for economic growth. This implies that a greater emphasis on agriculture is needed in national development plans and a greater recognition of its interdependence with industry. Because of the shortage of suitable land which can be brought under cultivation without large capital expenditures, increases in agricultural production in most developing countries will depend largely on raising yields on existing land areas. The scientific basis for the necessary yield increases is available through use of improved seeds and plant varieties, water control, and increased use of chemical fertilizers and pesticides. Much remains to be done in adaptive research, extension, and training as well as in organizing to provide the necessary supply services to agricultural producers.

The dimensions of the problem of hunger and malnutrition are such that no nation acting alone can provide the solution. Nearly three-fourths of the world's people live in the developing countries, where population is increasing most rapidly and food supplies are least adequate. Many of these countries are newly independent. In addition to facing the major task of bringing food supplies and people into balance, they face new and complex problems of managing their own internal and external affairs. Under these conditions, the world is witnessing the greatest inter-country assistance efforts yet experienced -- bilateral as well as

multilateral efforts through intergovernmental organizations. International cooperation is and will continue to be an essential ingredient in the success of efforts to win the war on hunger.

## 2. ASPECTS OF AN AGRICULTURAL STATISTICS SYSTEM

In recent years, emphasis by FAO has been increasingly given to work on improvement of current agricultural statistics. One of the principal objectives of the 1970 World Census effort is to assist countries in developing the framework for improving their current statistics programs.

### 2.1 Types of agricultural statistics

The types of agricultural statistics needed in planning and implementing programs may be classified into two broad categories:

(1) Those providing data on the structure or enduring features of the agriculture of a country -- the agricultural holdings; their distribution according to regions, size, and tenure; extent and area of land devoted to main land uses; and the means or resources of production, including information about the population engaged in agricultural activity.

(2) Those which supply data currently on the various agricultural activities occurring during a given year -- including crop production, numbers of livestock and animal production, trade and prices of agricultural products, agricultural labor, and such other subjects as may be needed.

The first class of statistics may be met by conducting a census of agriculture at reasonably fixed points in time -- at 5- or 10-year intervals. This provides a benchmark against which progress and change may be measured from one census period to another. The second category constitutes the current agricultural statistics program, concerned with the measurement of short-term changes in agricultural conditions within a year and from year to year.

### 2.2 Needs and uses of data

Agricultural data for a country, whether relating to census or current programs, should be collected only to the extent that they provide a guide to program planning and administrative action and are of service to the general public. The collection of statistics should, therefore, be initiated only after careful interdisciplinary planning by policy makers, analysts, and statisticians, in consultation with users, to avoid compilation of figures which are not really needed. This should include a review of all available information, including administrative records and reports. Such reports may be deficient in coverage, yet if reasonably complete their use may permit allocation of resources to the collection of other needed subjects for which little or no information is available.

2.21 Evaluate existing conditions.--Initially, a thorough evaluation of existing conditions in the country is needed to define problem areas and establish objectives directed at their solution. For some objectives, the statistical measures required may be relatively simple and the subjects for investigation obvious. For others, translation of objectives into subjects to be surveyed and specific data needed may be quite complex. In each case, decisions on subjects for investigation should take into account the usefulness of the subject for measuring the objective, as well as the adequacy of the data-collection procedures to obtain meaningful results.

One example is included to illustrate attention given to this matter in a joint session of the Near East Commission on Agricultural Planning and the Near East Commission on Agricultural Statistics, sponsored by FAO in November 1966. It was noted that major changes in land-use policy and in intensification were urgently needed if agricultural production objectives of countries were to be realized. The Near East Study emphasized:

(1) Substituting a cereal-legume rotation for the traditional cereal-fallow system in certain areas of higher rainfall.

(2) Development and settlement of substantial areas of higher rainfall land in countries having under-utilized land resources.

(3) Modernization of irrigation and drainage systems.

(4) A considerable expansion of mechanization to make it possible to cultivate more land, reduce

fallow, and facilitate timely operations.

(5) An intensive program of plant breeding and development of seed improvement programs.

Attention was also devoted to the lack of statistics and studies, and to ways and means of filling the gaps. Efforts of the Commission, with cooperation of planners and statisticians, resulted in the preparation of a "phased program for the rationalization of the process of data collection and use."[8]

2.22 Plan development programs.--An agricultural census and current sample surveys provide the basic data about a country's agricultural economy needed in planning development programs. Without meaningful statistical data it is impossible to plan realistic programs. The census and sample surveys will:

(1) Provide planners with a basis for making the best use of land resources in meeting food production goals, including decisions as to the areas and kinds of crops to plant, and cultural practices needed to increase yields.

(2) Assist in organizing and locating supply, marketing, and processing services and facilities needed to support expanding agricultural programs.

(3) Provide data about rural people -- their age, sex, income, residence, and facilities -- necessary for planning community development and improved nutrition and health services.[9]

2.23 Measure progress. -- An essential feature of a statistical system is that it provides measures of change from one period to another. The role of the census is that of providing such measurements at relatively infrequent intervals. It measures long-term trends in the structure and organization of agriculture, technology of production, and in use of resources in farm operations. Measurement of short-term trends, such as crop conditions during a single crop year or comparisons of crop production, stocks, or prices from year to year, are provided by the current statistics system. Comparability in questions asked, coverage, definitions, and survey procedures is necessary to make feasible the measurement of change or progress over time.

2.24 Guide research. -- The agricultural census and current statistics programs provide the basic statistics needed in research studies. The census, in providing a detailed description of a country's agriculture, points to special areas or problems to which research attention should be directed. The fact that census data are obtained for small areas permits a researcher to regroup these into areas other than those originally prepared -- such as for river basins, development areas, special types of agricultural holdings, or for whatever purposes needed. The census, as well as the current statistics system, provides the statistical framework for selection of samples for special research studies.

2.25 Establish basis for taking action. -- Census and current statistics data have their most widespread use as a basis for action -- by government agencies at all levels of administration, by commercial organizations, and by individuals. Summary information, upon release to the public, becomes equally available to all interested users. Results are cited in the press, in public discussions, in books, periodicals, and in the school room.

Agricultural statistics relating to crop conditions, production, inventories, and prices are important to individual farmers in making decisions about planting, breeding, feeding, and marketing programs. They are equally important to dealers, processors, warehousemen, and transportation agencies in making operational decisions regarding the purchase and handling of agricultural commodities.

### *2.3 Quality and reliability*

Persons responsible for planning and designing census and current statistics programs should be mindful of the various sources of error, both sampling and nonsampling errors. Efforts must be directed toward controlling all of these. Application of probability sampling techniques will provide

[8] Report of the Joint Session of the Near East Commission on Agricultural Planning and the Near East Commission on Agricultural Statistics, FAO, Rome, 1966.

[9] Brooks, Emerson M. 1970 World Census of Agriculture. Washington, D.C., International Agricultural Development, U.S. Department of Agriculture, Jan. 1968.

a basis for measuring the error associated with sampling. Unless nonsampling errors are given equally careful attention, they may be so large as to invalidate the usefulness of results. Their control requires careful attention to:

(1) Questionnaire construction to assure wording is simple and concise, in terms that respondents can understand.

(2) Requesting data that conform to respondents' record keeping systems; or if records are not kept, avoiding questions that are subject to excessive memory bias.

(3) Pretesting survey plans on a small group of respondents, to aid in designing plans and questions that will satisfy objectives.

(4) Providing adequate training and supervision for interviewers, when interviewing is the method of collection.

(5) Processing of reports, including checking or reviewing, editing, coding, tabulation, analysis, and publication.

### *2.4 Comparability*

It is essential that census and current agricultural statistics programs be established to make comparisons feasible, in space as well as time. Geographic comparability is needed when figures for different countries, or for different administrative levels within a country, are to be aggregated to obtain totals. In time series, it is necessary that figures relate to the same definitions, provide comparable coverage and hold to the same concepts so that meaningful comparisons may be made from one period to another.

Special attention is given in another section to the need for international comparability for certain basic items in planning for the 1970 World Census Program.

### *2.5 Census and current statistics survey methods*

The traditional practice in collecting agricultural census data has been by complete enumeration of all individual holdings. This system has the advantage of providing data needed for small areas or administrative units. With the development of probability sampling during the past two or three decades, the combination of complete coverage of certain holdings and sampling of others has been frequently employed. Further, the census may be conducted in two or more stages in which the first is a complete enumeration of the basic items needed and provides information about holders' operations to be used in selecting samples of holders for special surveys in later stages. Use of mailed questionnaires in these sample surveys, with appropriate follow-up mailings to nonrespondents to assure adequate returns, has become a common practice.

A sample can be effectively used as a substitute for complete enumeration provided it is properly designed and conducted. In fact, considerations of budget, available staff, and problems of survey organization and training requirements may make necessary the use of sampling techniques. However, the technical problems in planning and carrying out a sample census may be more complex than for a complete enumeration. Expert knowledge of sampling theory and skill in its application are required.

Surveys to provide data needed in current agricultural statistics programs present special problems relating to timeliness of results, frequency of obtaining data, and the length of questionnaires. In a well developed reporting service for current statistics, data should be collected from holders in accordance with the rhythm of agricultural operations.

Use of the mail questionnaire has certain advantages in countries where the literacy rate is high and mailing facilities are adequate. It is relatively inexpensive. Returns can be obtained speedily. If time permits follow-up on nonrespondents (with second and third requests by mail and use of telephone or personal interview on a random sample of the remaining nonrespondents), bias due to nonresponse can be minimized. Otherwise, where timeliness in reporting results permits only one mailing, dependence on census benchmark data and techniques for adjusting for bias (for example, crop yields, livestock numbers) become necessary.

A common practice involves a combination of mail and personal interview and probability sampling

insofar as feasible. For example, it may be possible to mail questionnaires to selected large-volume producers in countries where a low literacy rate prevents use of the mail as a general practice to the less important producers. The latter group could be covered by personal interview, using a smaller sampling rate than that applied to the large-volume producers.

Increased use is being made of crop counting and cutting techniques in forecasting and estimating crop yields. Data are obtained by visits to randomly selected fields and crop plots at successive stages during the latter part of the growing season and at harvest.

## 3. CENSUSES

An agricultural census is a government-sponsored operation for the collection of quantitative information on the agricultural structure of a country. The agricultural holding is used as the unit of enumeration. Information obtained should relate to operations within a single agricultural year.

### 3.1 Purpose

The kind of information provided by an agricultural census is essential to a country's understanding of its agricultural economy in relation to its total economy. It gives a Nation basic and important information about itself. Whatever the program objectives of a country--whether concerned with land reform, land reclamation, increased irrigation, more intensive use of land, greater use of machinery, or industrial expansion--the taking of a periodic agricultural census is a key step in the needed development.

3.11 Describe agricultural structure.--A description of the structure of agricultural industry, in its broadest sense, requires distinguishing between three sub-structures: (a) the input or supply sector; (b) the production sector, and (c) the marketing sector. In addition to these, there is the capital and credit structure which cuts across all three and is the catalytic agent that makes the industry function.[10] The traditional agricultural census has been directed at the production sector and a description of holdings by type, size, and tenure. With rapid developments in recent years in the complex interrelationships between supply firms, production units, and market outlets, more attention needs to be directed toward an understanding of these relationships. More information is needed regarding the association of holdings with other industries; for example, whether the holding is part of an enterprise having activities other than farming--such as meat packing, manufacture of dairy products, canning of fruits or vegetables, etc. Also of increasing interest is the extent to which any part of the agricultural produce of the holding is produced under contract for the manufacturing industry.

3.12 Provide benchmark data to measure level and change.--The "benchmark" aspect of the agricultural census serves a basic purpose that cuts across all of the needs and uses described earlier (in section 2.2). One especially important use of census benchmark data deserves further elaboration here -- their use in periodic revisions of current crop and livestock statistics in consideration of the data reported for census years.

Current estimates of crop areas, yields, livestock numbers, and related statistics are generally based on data collected from samples of respondents or other measurements in the population of interest. The results are subject to sampling errors as well as nonsampling errors.

It is more difficult to make accurate estimates of some crop or livestock items than for others. Sampling errors vary widely, depending on such factors as whether the item is widely produced among the population of holders and on the magnitude of variations in yields. Check data, such as rail or truck shipments, mill receipts, and quantities

[10] Scofield, William H. Analyzing the Structure of Agribusiness Relations. Journal of Farm Economics, Vol. 48, No. 5. Dec. 1966.

packed or produced, are also helpful in making reliable estimates, and especially in making revisions at the conclusion of a crop or marketing year. Dependence on the census for longer-term revisions, therefore, varies among items and increases with the size of sampling and nonsampling errors involved.

The census, although theoretically a complete enumeration of all units in the population, is also subject to errors of incompleteness, response errors, and errors in recording and processing the data. In practice, it is advisable to conduct "quality evaluation" or "coverage check" surveys as a part of the census operation. Results of these surveys provide interpretation of census data in revising current statistics.

3.13 Establish sampling frame for current statistics.--The census provides the statistical framework for developing a program of current statistics based on sample survey techniques. It makes possible the compilation of a nearly complete list of holders, identified by type of farm, principal commodities produced, and suitable measures of size, such as crop area in holding, number of livestock, or value of sales. Thus, stratified probability samples can be designed and selected to meet specific survey problems. This will permit sampling of the larger holders at a heavier rate than the smaller ones, and limiting the coverage for surveys relating to particular crops or species of livestock to holders reporting such operations in the census. Appropriate control data provide a basis for efficient follow-up of nonrespondents and determining inflation or estimation methods to be employed.

3.14 Provide small area data.--A census is often the only source of data for the smallest administrative subdivisions of a country, and should be planned in recognition of the decision-making needs at that level. Agricultural advisors and others concerned with formulating work programs of a local nature make widespread use of census data at this level of geographic detail. Such data are useful not only for census years, but are frequently used in preparing estimates for these subdivisions on the basis of current national or regional estimates in years for which no census is taken.

Reference was also made in an earlier section (see section 2.24) to the advantage of being able to regroup data for small areas into other areas for which there may be special data needs--for example, into special development areas or conservation districts.

### *3.2 Content*

Section 5 of this chapter is devoted to a detailed discussion of the topics proposed for coverage in the 1970 World Census of Agriculture Program. A basic point to keep in mind is that the content of a census questionnaire should be "tailored" to meet the country's objectives. FAO has recommended a "Short List" of questions for which internationally comparable information is desired, and an "Expanded List" consisting of items primarily of regional importance. Questions on the "Short List" may be varied to meet the individual country's needs. Countries, however, are urged to prepare questions relating to the "Short List" in such a manner that they correspond or can be made equivalent to items in the 1970 Program.

Care should be taken in planning the content of census questionnaires to avoid topics so complex or burdensome as to jeopardize respondent cooperation. It should be recognized that such items may be better suited to handling in special research studies. This is especially true if the subject can be adequately treated by collecting data from a relatively small sample, where highly skilled interviewers can be utilized to obtain the needed information.

## *4. NEEDS AND USES OF CURRENT STATISTICS*

Current and reliable agricultural statistics are essential to the planning of agricultural economic policies that will tend to meet food production requirements and improve the standard of living of farm people. Data on crop conditions, prices, employment, and related subjects are widely used as a basis for action by Government agencies,

legislative bodies, commercial organizations, handlers of agricultural products, and farmers. Current statistics also provide guidelines to needed research and special studies. Data at the national level may suffice to meet users' principal needs, and these require top priority. For certain types of statistics, however, geographic breaks within a country are needed and should be given consideration as resources permit.

### *4.1 Measurement of levels and short-term changes*

Current statistics are useful for measuring levels and short-term changes, and should be issued as often as necessary to provide timely information about the agricultural economy. The frequency of reports may vary widely depending on data needs. Crop forecasts and estimates of production, for example, may report conditions on a monthly basis during the growing season. Annual reports on crop areas sown or livestock numbers may suffice. Stocks of agricultural commodities held on farms and in commercial warehouses are subject to sharp changes within a single year, suggesting the need for quarterly, monthly, or even more frequent information. Agricultural prices, in particular, require frequent reporting to supply needs of users in planning programs and making marketing decisions.

As discussed earlier in census programs (see section 2.23), measurement of change requires comparability in statistical practices--coverage, questions asked, definitions, sampling, and survey procedures generally.

### *4.2 Measurement of "hard to get" items*

Certain types of information involve complex reporting problems and are more appropriate to inclusion in a current statistics program than in a census (see section 3.2). In sample surveys, more intensive attention may be given to special concepts requiring detailed probing. Adequate treatment of such concepts is more difficult in large-scale census operations. Examples include surveys of such topics as crop production costs, pesticide application practices, and labor requirements.

### *4.3 Content*

Determination of topics that should be included in a program of current agricultural statistics has been a subject for discussion at a number of international conferences in recent years. A list of such topics was prepared by the Committee on Improvement of National Statistics (COINS) of the Inter-American Statistical Institute, at its VIII Session held in Panama in 1964.[11] This list is included below to illustrate the scope of subjects, and frequency of coverage, which a current statistics program might include. Briefly, the program would include: (a) estimates of area sown and harvested for principal crops, with production forecasts and estimates; (b) numbers of livestock; (c) prices received and paid by producers; (d) persons employed on holdings, and wages paid; (e) machinery and equipment acquired; and (f) data on income, expenditures, and value of sales of land and fixed assets. The detailed listing follows:

| Topic | Frequency |
|---|---|
| Harvest forecasts for principal seasonal crops, by crop | Semi-monthly |
| Seasonal crops: area, quantity produced and value of produce sold, by crop | Annual |
| Area and number of plants of permanent crops planted and harvested during the year, and total production and sale, by crop | Annual |
| Number of head of livestock and poultry at the end of the year and number bought, sold, and slaughtered during the year, by kind, age, and sex | Annual |
| Number of holdings and annual production of animal origin, by product | Annual |
| Average prices paid to producers for principal products obtained on the holding, by product | Monthly |
| Average prices charged to producers for principal items utilized on the holding, by item | Monthly |
| Persons employed, by sex and special age group, according to occupational status | Semi-monthly |

[11] Inter-American Statistical Institute. Inter-American Program of Basic Statistics. (PIEB), 503la, Sup. V. Washington, D. C., 1964.

| Topic (cont'd) | Frequency |
|---|---|
| Wages and salaries paid during the year, by occupational status, according to size of holding | Annual |
| New agricultural machinery and equipment acquired during the year for use on the holding, by type of machinery and equipment | Annual |
| Income during the year, by source, according to size of holding | Annual |
| Operational expenditures during the year other than salaries and wages, by type of expenditure, according to size of holding | Annual |
| General expenditures and depreciation during the year, by type of expenditure, according to size of holding | Annual |
| Value of acquisitions of land, livestock, and other new and used fixed assets during the year, by type of asset, according to size of holding | Annual |
| Value of sales of land and other fixed assets during the year, by type of asset, according to size of holding | Annual |
| Value of goods consumed in the holder's household whether produced on the holding or acquired, according to type of consumer good | Special |

## 5. SCOPE AND OBJECTIVES OF 1970 WORLD CENSUS PROGRAM

The 1970 World Census of Agriculture envisages that each government will obtain, as far as possible, accurate and comparable information on the structure of its agriculture. Coverage is intended to relate to all agricultural holdings, regardless of size and location. Practical considerations, however, often make it necessary to limit coverage to those holdings which operate above minimum limits with respect to area, volume of output, number of livestock, or number of trees. No uniform limitations are suggested as conditions will vary from one country to another. Many countries have a large number of small holdings that contribute significantly to production of important agricultural commodities. In view of this, it is recommended that the minimum criteria be made as low as feasible.

### 5.1 *"Short" and "Expanded" Lists of items*

The FAO World Census Program recognizes that local conditions as well as data needs vary from country to country. A uniform questionnaire is not planned for all countries, but a "Short List" of items has been provided for which internationally comparable statistics are expected. These are considered of major importance in the world's agriculture. However, no country is expected to obtain information of little importance to the country, even though that item is on the "Short List".

In addition, an "Expanded List" of items has been prepared, consisting of items which are primarily of regional importance. In developing the questionnaire, countries may wish to add items of local interest that are not on the "Expanded List". Caution needs to be exercised, however, to avoid loading the questionnaire with secondary items to the extent that it becomes overly burdensome.

Following is a listing of subjects recommended for coverage in the 1970 Census program. Under each topic the principal objectives to be served and considerations of data needs are discussed briefly.

### 5.2 *Holding*

Agricultural statistics should be presented in a manner that will provide the most significant numerical description of the resources and economy of a country. The agricultural holding is the primary unit from an economic standpoint. Data on the number of holdings, their distribution by size classes, and the extent of fragmentation or number of parcels per holding contribute importantly to an understanding of a country's agricultural structure.

### 5.3 *Holder*

Information about the holders, the persons responsible for operation of the holdings, is also an essential part of understanding the structure of agriculture in relation to a country's population. Agricultural policy makers need to know the extent

to which holdings are operated by individuals (civil persons), corporations, cooperatives, or institutions. Among the individual holders, another significant item to understanding the dependence of holders on the land is how many have agriculture as their main occupation as compared with numbers with nonagricultural occupations as their principal source of income. A distribution showing holders by size-of-holding classes provides further means of understanding a country's agricultural economy and resources.

### *5.4 Tenure*

Land tenure in the World Census Program is concerned with the rights under which the land is operated. Area owned and area held in ownerlike possession are treated similarly, as the operator is assumed to have complete economic responsibility for the holding.

The form of tenure under which land is held bears directly on the efficiency with which holdings are operated and on the living standards of the agricultural population. The existing system of land tenure is considered a major obstacle to efficient development of the agricultural sector in many countries. Some have passed land reform laws in recent years, and basic information is needed to carry out effective programs. Most of the legislation tends to establish family units as the desired form of tenure, but this does not rule out other forms such as rental contracts, hired labor arrangements, cooperatives, or crop-share contracts. The size of the agricultural unit depends on the use of the land, type of soil, and climate. It is intended to enable holders to attain adequate income levels.

Information needed in the census to assess problems relating to land tenure systems, as well as to measure the effectiveness of land reform programs, includes virtually all of the subjects proposed for 1970 coverage. Forms of tenure need to be related to data on land utilization, productivity, irrigation and fertilization practices, power and machinery used, and transport facilities. Among the items of tenure information needed are the area of land owned (including ownerlike possession) by the holder or renter; if rented, whether rent is fixed or is a share of the production; area operated on a squatter basis; area operated under tribal or traditional communal forms of tenure; and area operated under other arrangements.

Statistics on tenure have been widely used in the planning and implementation of various forms of land reform programs, including land redistribution, improvements in landlord-tenant relations, adjustment of traditional tenure systems, land settlement, and tax reform. Tenure data, when further classified according to size and type of holding associated with each tenure arrangement, provide information needed in assessment of supporting measures in land reform, such as: needs for agricultural credit, production supply requirements, marketing programs, and plans for community development.

### *5.5 Type of holding*

This topic provides classification of holdings according to whether they are producing mainly for home consumption or mainly for sale. A further breakdown is provided for the latter group, to classify holders by the most important types of agricultural production. A cross tabulation of type and size of holdings provides a useful economic structuring of holdings needed in program planning.

### *5.6 Land utilization*

Statistics on agricultural uses of land are basic to the planning and conduct of public programs concerned with conserving, managing, and developing land resources. Growing populations and other factors have contributed to increased competition for a country's fixed area of land. Periodic data showing trends in the nature and intensity of land uses, shifts in major agricultural uses, and land area absorbed by nonagricultural uses are essential if public agencies as well as private organizations and persons concerned are to keep abreast of changing conditions and make sound plans for future action. This section of the World Census Program proposes a classification of land utilization on

agricultural holdings according to major land use classes, showing the number and area of holdings with arable land; land under permanent crops; land under permanent meadows and pastures; wood or forest land; and all other land.

### *5.7 Crops*

Statistics on crop areas serve several fundamental purposes. For nearly all field and vegetable crops, area figures provide one of the two components of production -- the other being the yield per unit of land (tons per hectare, etc.). Inclusion of crop area data in the census program (including numbers of fruit trees or vines in the case of permanent crops) provides benchmark statistics upon which a program of current crop area estimates may be based. Together, census and current area data on crops provide basic information needed for program planning, administration, and research purposes. They provide the added detail in making land utilization data more meaningful. Further, crop area data provide useful demand indicators for various farm production supplies, for farm labor, and for transportation, marketing, and storage requirements. To the individual holder, who is called upon to furnish the information, the census and current crop reports are of assistance in planning for production and marketing. Census crop data may be the sole source of statistics for small geographic areas and may serve as a means of distributing current National or regional figures to the small areas.

Items on crop production are proposed in the Expanded List, to be included in the census only if determined by a country to be needed. It is recognized that better information on crop yields may be obtained from current sample surveys, using objective crop measurement techniques. However, the census may provide the only opportunity in some countries to obtain production information.

### *5.8 Livestock and poultry*

A periodic enumeration of the principal classes of animals and poultry provides information on the status and trends in the livestock industry. These counts, together with data on crops, give an indication of the relative importance of various producing areas and types and sizes of holdings. As described for crops above, census data supply the necessary base for a program of current estimates of livestock inventories and production and for distributing current National estimates to small geographic areas. Age and sex distributions furnish the basis for livestock productivity studies and for projections of inventories or markettings.

### *5.9 Employment in agriculture*

Attention has been increasingly drawn to the relative importance of agricultural and nonagricultural employment in a country's economy. As mechanization in agriculture has increased, requirements for farm workers have decreased. In 1964, about 55 percent of the world's labor force was engaged in agriculture -- ranging from as low as 10 percent in some highly developed countries to as high as 90 percent in less developed parts of the world.[12]

Within agriculture, a primary need is for labor input data and the extent to which work is performed by the household of the holder or by hired agricultural workers. It has been recognized that the traditional census approach, collecting data for the crop year in a single enumeration, is not a satisfactory procedure to provide needed labor data. In the absence of good record-keeping systems, it is difficult to remember details as to labor practices and requirements over a year's time. Employment patterns are subject to wide seasonal variations, and limiting the inquiry to a single survey week at about the time of the census will not provide an adequate picture of labor usage. Some countries have resolved this problem by conducting a series of sample surveys, relating to selected periods spaced throughout the census year.

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[12] McKibben, E. G. and Carleton, W. M. Engineering in Agriculture. Farmer's World. Washington, D.C., U.S. Dept. of Agriculture, 1964.

Results can be related to the basic census reports by holdings for needed classifications of data. This is the recommended procedure for countries in a position to obtain more data than the minimum.

### *5.10 Farm population*

The Census of Agriculture, as an enumeration of agricultural holdings, considers as the agricultural or farm population all persons who live on the agricultural holdings or in the households of the agricultural holders. Coverage includes households of all holders, whether living on agricultural holdings or not. Agricultural laborers who do not live on the holding are not included, as information about these people and their dependents cannot generally be obtained from respondents to the agricultural census.

Information about the farm population, as defined, relating age and sex classifications to size-of-holding classes is basic to an understanding of the relationship of farm people to the holdings they operate. Special emphasis has been given in recent years to the need for population data of this type with the increased attention being devoted to area development and rural development programs. Central to these programs are problems of human resource adjustments in and outside of agriculture.

### *5.11 Farm population in relation to a census of population*

A general census of population, covering people in all branches of the economy, provides data on employment in all occupations and industries. However, it is not generally feasible to include in the population census the information about agricultural population necessary to relate this with the characteristics of their agricultural operations. Further, there are necessarily conceptual differences between the censuses of population and agriculture in definition of persons connected with agriculture. The census of population, using the occupation criterion, would include agricultural laborers and their dependents who live outside the agricultural holdings. However, many people who live on and operate small holdings would be excluded if their main economic activity is outside agriculture.

If the agricultural and population censuses are taken together, arrangements can and should be made to relate data about the agricultural population to their holdings. In some cases where the two censuses are taken separately but relatively close in time, it may be feasible to match samples of returns from both to provide the desired data.

### *5.12 Agricultural power and machinery and general transport facilities*

Increased use of mechanical power and labor-replacing machinery in agricultural operations has been accompanied by a sharp decline in the numbers of draft animals and farm workers required. The need for periodic measurement of this phenomenon continues. In consideration of the tremendous advances that have been made in farm mechanization in some areas, it is worth noting that more than 90 percent of the power on farms of the world is still being generated by human beings and by animals. Greater production of food in many regions is dependent on man's ability to harness mechanical power to better tools and equipment.[13]

The proposed 1970 Census coverage for the subject of agricultural power and machinery has been expanded over the 1960 list to provide a more complete inventory of agricultural machinery and implements on the holding. Data on the use and source of power, related to size-of-holding classes, are essential to an understanding of the impact of these advances in technology.

As farm workers have been displaced by increased mechanization, there has been a corresponding increase in employment associated with the manufacture and distribution of farm machinery, equipment, and supplies to farm operators. These service industries have a major interest in information relative to trends in the use of farm machinery and equipment and in the demand for these items.

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[13] See footnote 12.

Significant changes have also been taking place in methods used to move agricultural products from farm to market. Transportation services are developed and improvements made on the basis of information about the growth and distribution of specific commodities. To provide at least limited satisfaction of the needs for data about this subject, a general question has been recommended for inclusion in the 1970 Census to identify methods used for transporting agricultural products from the holding to first place of sale.

### *5.13 Irrigation and drainage*

The necessary increase in agricultural production, to keep pace with increased population demands, can be achieved in two ways. One is to use more area of potential arable land; the other is to increase the efficiency of utilization of land now being farmed. Use of water for crop irrigation and drainage of agricultural lands are two principal means of expanding production, both on land currently being farmed and in extending the land area suitable for growing crops. The use of water for irrigation makes possible the full use of advanced technology in farming; these include the proper application of fertilizers, the adoption of good crop rotation practices, and the use of the best varieties.[14]

The use of water for irrigation puts agriculture in competition with other industrial needs, as well as with human population needs for existing water supplies. Data on water usage has become of widespread interest to persons making decisions relating to water rights, drainage problems, reservoir construction, needs for recreational areas, flood prevention, and water pollution. The introduction of lightweight portable pipe in sprinkler irrigation systems has reduced costs of installation and maintenance, resulting in a more general adoption of this practice where supplemental water is required to overcome the effect of drought periods on crop yields.

From the standpoint of meeting world agricultural needs, the problem of removing excess water from the soil is about as important as the problem of water shortage. Many countries have large areas of waterlogged but potentially good cropland that can be reclaimed by providing drainage. As excess water is removed from the land, non-producing land may be made productive and producing land more productive. The census is directed at providing information on the extent of artificial drainage, which is accomplished by constructing ditches, installing tile lines, or by pumping from wells.[15] To the extent that these practices are significant in a country, it is important that statistical data be obtained periodically to show trends in their adoption.

### *5.14 Fertilizers and soil dressings*

The effects of fertilizer on improving the efficiency of crop production are well known and can scarcely be overemphasized. Recent decades have seen rapid strides made in treatment of soils, as scientists and farmers generally have learned that each of the many kinds of soil requires its special treatment. Experimental studies with fertilizers, lime, crop rotations, tillage, irrigation and drainage practices have paid great dividends in increased yields. These developments, coupled with technical advances in the chemical industry to make fertilizers better, cheaper, and more abundant, have resulted in major changes in farm practices.

Statistics on trends in application of fertilizers, areas treated and amount applied should be obtained periodically. The proposed coverage for this topic in the 1970 World Census program is about the same as in 1960.

### *5.15 Wood and fishery products*

Data on forestry and fishery products are proposed for inclusion in the 1970 Census of Agri-

[14] Greenshields, Elco L. Water Has a Key Role. Farmer's World. Washington, D.C., U.S. Dept. of Agriculture, 1964.

[15] Bower, C. A. and Lunin, Jesse. Problems of Soil and Water. Farmer's World. Washington, D.C., U.S. Dept. of Agriculture, 1964.

culture program only to the extent that production of these commodities on agricultural holdings may not be adequately covered in other statistical programs. Woodlands and fish ponds on agricultural holdings are both of increasing frequency and importance as a supplemental source of income. Although no items in this section are suggested for the "Short List," census coverage of items of importance in a country is encouraged as necessary to complement statistics available from other sources.

### *5.16 Association of agricultural holdings with other industries*

There is a growing interrelationship between farms and businesses that serve farms. This subject has several aspects for which information is needed to understand changes that are taking place in the management of production and marketing processes. First, there is the tendency for certain industries to acquire interests in the operations of agricultural holdings. Another development is in the extent to which business firms such as feed dealers, processors, canning factories, cooperatives, retailers, etc., enter into contracts with agricultural holders for the production of certain crops or animal products. Further, there has been a growth in the agricultural service industry, in which firms supply a variety of farm services including crop spraying, cultivation, harvesting, grading, packing, etc. Vertical integration is a general term that has been applied to these important developments.

## *6. TABULATION OF RESULTS*

Suggested tabulation plans have been prepared by FAO for each of the questionnaire sections and are included in the Program bulletin.[16] The plan includes presentation of information regarding all items on the "Expanded List" by size class of holdings. Items and size classes for which data are desired from all countries are presented in bold type. Other significant classifications, such as data by tenure or by type of holding, are also recommended wherever possible.

The tabulation plans suggested refer to data for a country as a whole. Similar tabulations can be prepared, as may be needed by a country, to present results by major administrative or geographic regions. Countries are urged to take full advantage of the possibilities offered by census results.

[16] See footnote 3.

## Chapter I - 2. CHARACTERISTICS OF THE COUNTRY

### *1. INTRODUCTION*

Agrostan is a mythical country created to provide a realistic setting for the planning of an agricultural census. Accordingly, it was necessary to determine how large the country should be, what physical features and climate it should have, how it should be subdivided administratively, how the population should be distributed, what type of agricultural activity it should have, what social and economic characteristics should be assigned to its inhabitants, and how its statistical organization should function. An attempt was made to create a fairly wide diversity of physical and cultural conditions which are characteristic of many developing countries.

### *2. BRIEF DESCRIPTION OF THE COUNTRY*

#### *2.1 Location and size*

Agrostan is located in the tropical latitudes of the Northern Hemisphere. To the northeast and to the south lie the neighboring mythical countries of Hondzuela and Kenyango; to the west lies the Atlific Ocean. The country covers a little over half a million square kilometers and has an overall density of roughly 15 persons per square kilometer. The population has been increasing rapidly -- from over $5\frac{1}{2}$ million in 1950, to approximately $7\frac{1}{2}$ million in 1960, and an estimated 10 million by 1970.

#### *2.2 Administrative divisions*

The nation has a centralist government with headquarters for the President and the governmental departments located in the capital city of Calicut. The country may be considered in two parts. The larger, comprising approximately four-fifths of the total area, is divided into 13 provinces (see figure 1) each headed by a province governor. The smaller part, which is sparsely settled and relatively undeveloped, is known as the Northern Territory and is administered by a territorial governor.

#### *2.3 Topography and climate*

The topographic outlines of the country are relatively simple. In the center is a large plateau with fairly steep sides which overlook the lowlands to the east and west. In the northeast and in the south are large mountain ranges; the large plateau itself has some highlands in the center (see figure 2).

The drainage pattern reflects the topography of the country. The major rivers drain either toward the Atlific Ocean or eastward into the neighboring countries; those in the southeast empty into Lake Thaipak. The most important river is the Kandy, which is navigable far into the interior.

The climate of Agrostan is tropical, so that temperatures are relatively high throughout the year. Precipitation conditions, however, vary from humid in the south to arid in the north. The interior plateau, partly because of higher elevations, also tends to be dry. The mountainous areas have a variety of climates, depending on height and exposure; accordingly, temperate as well as tropical conditions can be found in the uplands (see figure 3).

#### *2.4 Characteristics of the population*

The population of Agrostan is concentrated in large measure along the Kandy River and in the southwestern part of the country. Here are located the largest cities, the major industries, the best transportation network, and the most intensively used cropland. Aside from several small pockets of concentration, the density declines

*Figure 1. Administrative divisions*

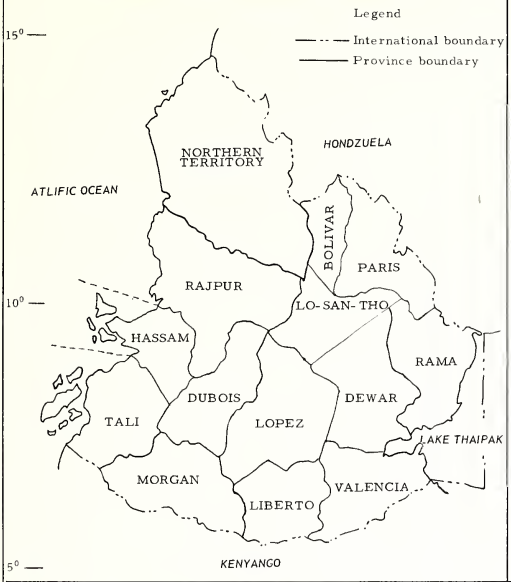



*Figure 2. Landforms and drainage*

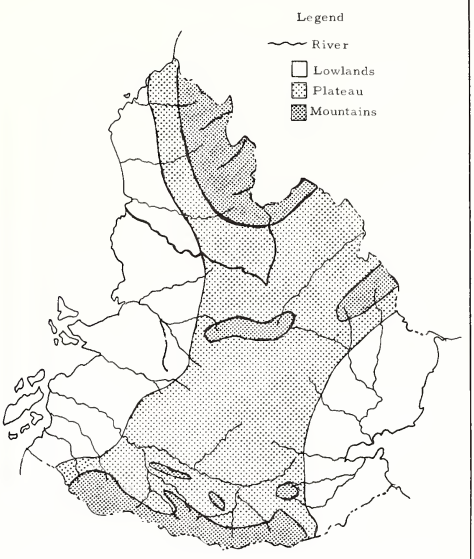



*Figure 3. Climate zones*

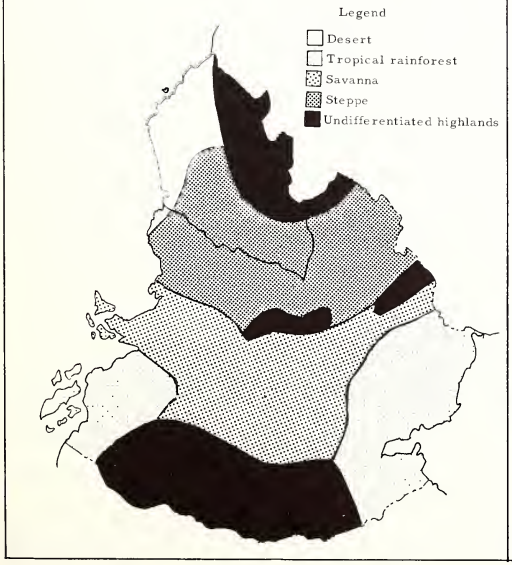



*Figure 4. Population density*

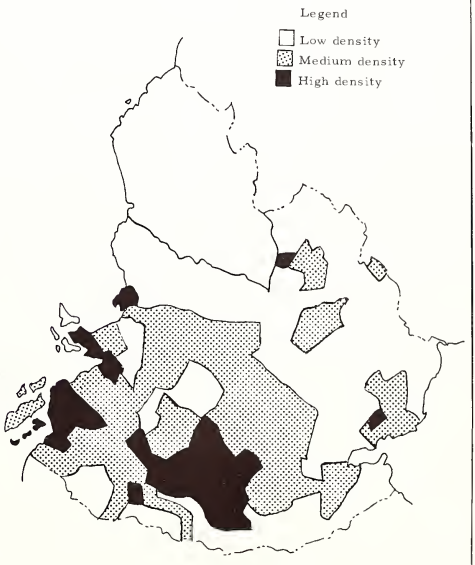
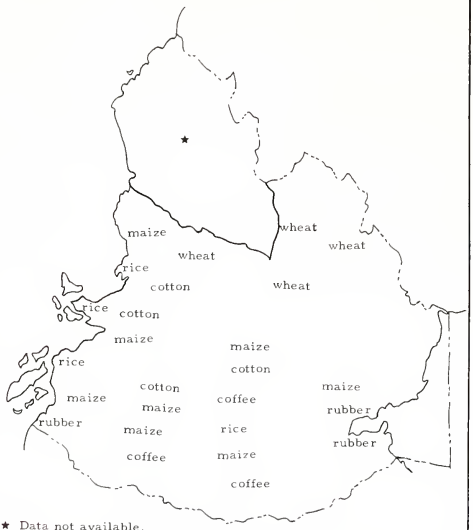


*Figure 5. Major crops*




★ Data not available.

*Figure 6. Livestock*


★ Data not available.

*Figure 7. Agricultural types*


*Figure 8. Geographic regions*

rapidly away from the core region of the Kandy River; the population is particularly sparse in the Northern Territory (see figure 4).

Agrostan has a large youthful population and a relatively high growth rate. If this rate continues, food surpluses in the country will disappear unless agricultural output is able to keep pace with population increase.

As of 1960, about three-fourths of the population lived in rural areas. However, the proportion appears to be declining rapidly, partly as a result of considerable migration to urban areas. The rural inhabitants in the provinces, for the most part, live on their holdings; in the Northern Territory, however, the inhabitants live in tribal settlements and travel out to their holdings from these centers.

### *2.5 Agriculture*

Agricultural activity in Agrostan is quite varied, being conditioned by such factors as climate, soils, markets, and transportation. The crop pattern reflects the influence of these controls. Among the grains, rice dominates in the humid south and wheat in the drier north, whereas maize is grown everywhere (see figure 5). Coffee is associated with upland terrain near the major transportation artery, the Kandy River. Cotton is grown along the Atlific Ocean coast, and rubber comes from the humid tropical climates of Tali Province and the Lake Thaipak area. Bananas, coffee, cotton, groundnuts, rice, maize, and cane sugar are the principal export crops. Much of the rice that is grown, however, and practically all of the wheat are consumed within Agrostan.

Among livestock, cattle are fairly widespread (see figure 6). Sheep are concentrated particularly in the drier north; goats are associated with subsistence holdings in mountain country, and hogs are found especially on the moderate-sized, commercially-oriented holdings along the Kandy River and the Coastal Plain.

Some of the more important types of agricultural activities are shown in figure 7. Generally, plantations are located in areas with good access to the coast; mixed farming producing a variety of vegetables and fruit is found in areas near large urban markets; subsistence holdings are prevalent in upland, desert, and forested areas; and grazing and extensive grain farming dominate over much of the central plateau.

### *2.6 Geographic regions*

Agrostan is divided into five major regions: Kandyland, Thaipakia, Atlifica, the Meseta, and the Northern Territory (see figure 8). Although these regions may have many different characteristics, they have a certain coherence and distinction which make them unlike other parts of the country. These differences establish a regional identity for the area which is generally recognized by the inhabitants of Agrostan.

Kandyland is centered on the Kandy River Basin, which is the most important portion of Agrostan, both in economic and demographic terms. Thaipakia is a poor lowland region of subsistence farming centered around Lake Thaipak. Atlifica, on the other hand, has a good agricultural base and is located along the coastal lowlands of the Atlific Ocean. The Meseta comprises the central plateau where extensive areas are devoted to wheat growing or cattle grazing, and little intensive cultivation takes place. The Northern Territory is less developed than the remainder of Agrostan, both economically and culturally; most of the inhabitants have very small holdings and are engaged in subsistence types of agriculture.

## *3. ADMINISTRATIVE STRUCTURE*

Agrostan is divided into 13 provinces and a small, relatively undeveloped area to the north called the Northern Territory. The provinces constitute approximately 80 percent of the total land area of Agrostan but about 95 percent of the total population. The Northern Territory, on the other hand, comprises roughly 20 percent of the land and only 5 percent of the total population of the country.

### *3.1 Provinces*

For administrative and statistical purposes, the province is the major division of Agrostan. The 13 provinces are divided into districts, and each district in turn is divided into subdistricts. The provinces and districts are legal divisions of the country and have legal boundaries; the subdistricts are administrative divisions for which boundaries are generally defined by local officials. In all, there are 172 districts and 975 subdistricts. The number of districts in a province ranges from 8 to 20, and the number of subdistricts from 25 in the province with the smallest population (at the time of the 1960 Census of Population and Housing) to 211 in the province with the largest population (see exhibits I-2-7 and I-2-9).

For the taking of the 1960 Census of Population and Housing, subdistricts were divided into smaller units called "enumeration areas." The enumeration area (EA) was an administrative area for purposes of conducting the census. In urban areas, one EA was generally assigned to several enumerators so that the census could be completed in 1 or 2 days; in rural areas, an EA was assigned to one enumerator who was expected to complete the census in 1 or 2 weeks. In total, there were approximately 14,500 EA's having an average of around 500 persons, or 100 housing units. The EA is the smallest area for which population counts were assembled in the 1960 Census.

The city of Calicut, with over 375,000 inhabitants in 1960, is the largest city and the capital of Agrostan. It is located in the province of Lopez and is coextensive with Calicut District. The next largest city at the time of the 1960 Census had approximately 175,000 inhabitants. Altogether, Agrostan had 221 cities and other urban places. For the most part, the cities are defined in terms of one or more subdistricts; however, many of the smaller urban agglomerations constitute only part of a subdistrict.

The number and size of the administrative subdivisions of Agrostan and the names of the province capitals are given in exhibits I-2-7 and I-2-9.

### *3.2 Northern Territory*

The entire Northern Territory is made up of three zones -- the Atbara River Basin, the Northwest, and the Subic Mountains. Recently, the zones were divided into 18 territorial districts. The districts, in turn, comprise 1,879 chiefdoms, which are largely tribal settlements. The chiefdom is the primary administrative level; chiefdoms vary from very small to large. Plans are under way to include all of them in the 1970 Census of Population. (There was no previous census in the Northern Territory.) The major city and administrative center of the Territory is Zanzi.

## *4. PHYSICAL BASE*

The physical features of a country often have a direct bearing on the types of agriculture being practiced there -- the kinds of crops, the varieties of livestock, the size of individual holdings, irrigation practices, crop seasons, etc. Furthermore, such factors as terrain or extremes in temperature and rainfall can also affect transportation and accessibility of an area. Planning for an agricultural census should take these factors into consideration.

### *4.1 Location and size*

Agrostan has been placed in the tropics, lying approximately between 5° and 15° north latitude. Its longitudinal extent is about nine degrees. The country borders on two other mythical nations: Kenyango in the south and Hondzuela in the north and east. To the west lies the Atlific Ocean. The nation's shape is roughly triangular, with its apex pointed north (see exhibit I-2-1).

The maximum dimensions of Agrostan are about 900 kilometers from east to west by about 1,100 kilometers from north to south. The country contains about a half million square kilometers, of which approximately one-fifth comprises the Northern Territory.

### *4.2 Topography*

The general physiographic structure of Agrostan is not very complex. There are six major landform features: a central plateau, surmounted by two small upland masses; a depression south of the plateau; two mountainous regions in the northern and southern extremes of the country; a coastal plain to the west; and a lowland plain in the southeastern interior (see exhibit I-2-2). Approximately 40 percent of Agrostan is plains area, 45 percent is plateau, and 15 percent is mountainous.

The physical core of the country, the central plateau or Meseta, stretches from the Rico Mountains north to Hondzuela. It has fairly steep sides so that access to the flat plateau upland is difficult in many places. The Meseta is topped by two highland masses, which bisect the plateau but do not form a continuous barrier to north-south movement.

Differences in elevation are evident on both sides of these mountain masses. The Meseta Sur (or southern segment) includes the major portions of Lopez and DuBois Provinces. It is lower than the Meseta Norte (the northern part) which includes Bolivar, Lo-San-Tho, and Paris Provinces, as well as the central part of the Northern Territory. The flat-to-rolling topography of the plateau lends itself well to such extensive types of agricultural activities as grazing and grain culture.

Between the faulted edges of the Meseta and the Rico Mountains lies the Kandy Depression, a large valley occupied by the river of the same name. It encompasses contiguous parts of Lopez, DuBois, Liberto, and Morgan Provinces and is the most important and most used transportation route in the country, extending from the Iwo Mountains west to the city of Cairo. The lower course of the river beyond this point flows through flat and often marshy and poorly drained terrain in Tali Province; this area belongs to the coastal plain section of the country. This is fairly ideal country for paddy farming.

The Rico Mountains (Liberto and Morgan Provinces) in the south are high and rugged. Although this upland tends to discourage north-south movement, there are several passes which can be followed. Tea, coffee, and maize are important crops on the lower slopes, and grazing is widespread.

The Subic Mountains are located in the Northern Territory. The crest is situated near the western edge, and is not as high nor as rugged as the Ricos. The eastern part forms an extensive piedmont, containing a few comparatively wide valley floors and river terraces. Subsistence farming is quite common in these areas.

The Coastal Plain (Tali, Hassam, and Rajpur Provinces, plus the western part of the Northern Territory) is fairly flat. Its southern part is characterized by marshy terrain, off-shore islands, and drowned river mouths. The latter provide fairly good harbor sites. By way of contrast, the northern part of the shore line is much straighter, and no major port cities are to be found north of the Cuando River. Much of the country's irrigated land is found along the river valleys; elsewhere, grazing and extensive farming prevail.

The Thaipak Lowlands (Rama, Dewar, and Valencia Provinces) form the last physiographic area. The topography varies from flat to rolling plain; it is only at the border of the Meseta that steep slopes predominate. Agriculture is a subsistence type, and commercial farming is restricted essentially to areas close to the major rivers. Thaipak Lake is a fresh-water type which drains to the Atlific Ocean from Hondzuela. It is divided fairly equally between Agrostan and the two neighboring countries.

### *4.3 Climate*

Agrostan stretches from the humid climate of the equator in the south to the low-latitude arid and semi-arid climates in the north. Seasonal changes occur over the country as the position of the sun alternates. During the May to October

period, hot and wet weather conditions prevail. By contrast, from November to April, it is hot and dry. The major seasonal differences in Agrostan are accounted for by changes in precipitation, rather than temperature. Where a normal rainy season is found, planting of most crops begins with the onset of the rains and little control is necessary. In areas with relatively little rainfall, dry farming or irrigation is required to produce a successful crop.

4.31 Precipitation.--The yearly distribution of precipitation and temperature for the country can be determined from an examination of the climate charts of three typical stations: Hankow in Tali Province, Zamora in Hassam Province, and Daray in Rajpur Province (see exhibit I-2-4). These three stations reveal the basic kinds of climates which prevail over most of Agrostan -- the wet, the alternating wet-dry, and the dry types.

The precipitation pattern indicates an increase in total rainfall toward the south. In addition, all three places show a distinct summer peak (rainy season) and winter trough (dry season). Thus, although Hankow has a great deal of fairly reliable rainfall, with no dry months, its annual distribution does show one period of the year as somewhat wetter than the other. On the other extreme, Daray (which is toward the north) has a small total amount of precipitation, as is typical of arid and semi-arid areas. Rainfall is erratic and undependable. Zamora, by contrast, has a truly transitional precipitation regime. It varies between the humid and arid extremes, with two distinct seasons based on rainfall. Onset of the rainy season generally takes place in April or May.

4.32 Temperature.--Since Agrostan is situated in the tropics, the average yearly temperatures for the three stations are all uniformly high, and the difference, or range, between the coldest and warmest months is not large. However, the range increases toward the north, away from the equator. Frosts are not a matter of major concern except in highland areas, where average temperatures are lower.

4.33 Climate zones.--Five different climate zones can be distinguished in Agrostan (see exhibit I-2-3). First is the tropical rainforest type found in the southeastern and southwestern parts of the country. Average temperatures are high, temperature ranges are low, and rainfall is abundant and well distributed; there are no dry months. Hankow is a typical station. The savanna climate has a distinct wet-dry change of seasons and a small temperature range, as may be seen from the chart for Zamora. It prevails in the mid-portion of the Coastal Plain and on the Meseta Sur, where it is slightly modified by elevation and is drier. The Steppe, which encompasses most of the Meseta Norte and the adjacent portion of the Coastal Plain, is semi-arid. Total rainfall is fairly low and decidedly erratic; temperature fluctuations are somewhat greater than those encountered in the southern part of the country. The plateau portion, here too, tends to accentuate the aridity. Desert conditions, such as are found in Daray, prevail in the Coastal Plain and the Meseta Norte area north of the Hubli River. The highland climates are all placed under one category and shown as undifferentiated on the map. This is because they can differ greatly, horizontally or vertically, within short distances. The Rico and Subic Mountains, for example, have a variety of climates, depending on altitude, exposure, and general landform configuration. The lowlands generally have hot and humid conditions; whereas the piedmont has more moderate, mid-latitudinal characteristics, and the highlands are distinctly cool or cold.

### *4.4 Drainage*

There are three different drainage regions in Agrostan. The first encompasses the area tributary to Lake Thaipak. The second region is made up of the drainage from the eastern side of the Subic Mountains and that of the Simla Basin. The third region, covering the most extensive part of the country, includes all the streams which flow

west to the Atlific Ocean. The largest basin is that of the Kandy River which taps both the southern plateau and the Rico Mountains. Several hydroelectric installations have been built on some of the tributaries flowing down the edges of the Meseta toward the Kandy; they provide energy needed for the industries of Greater Calicut. As a result of more humid conditions in the Rico Mountains, the seasonal water flow of the tributaries from this part of the region are, by contrast, much more dependable and greater in volume. In Tali Province, the Kandy River flows over a flat, low surface; it carries large quantities of water along its lower course, and it is therefore subject to damaging overflow on its floodplain. The remaining streams in this largest drainage region emanate from eastern uplands and generally follow parallel courses as they cross the Coastal Plain on their way to the Atlific Ocean. In some cases, tributary streams toward the north are intermittent; their beds are occupied only after storms. Rivers in the provinces of Hassam and Rajpur, by way of contrast, reflect the alternating wet-dry climates of the savanna; they tend to overflow during the rainy season and have bare, minimal flows during the dry period.

### *4.5 Soils and natural vegetation*

Vegetation and soils accord closely to climate zones. The humid equatorial regions in the south have typically red and yellow colored soils which are leached and low in mineral and organic plant nutrients. They tend to be granular and porous, with poor water holding capacity. Savanna soils in the central part of the country are, on the whole, somewhat better for agricultural purposes. Although at times low in nitrogen and available phosphorus, they often respond favorably to good soils management.

Steppe and desert soils to the north develop under sparse vegetation composed of widely spaced desert shrubs and therefore lack much organic matter. Alkaline and saline materials may be present near the surface, as in the northern Dashi area; if abundant, they tend to form crusts and hardpan layers. In soils of medium to coarse texture, these accumulations are not high. Since these soils are usually well supplied with soluble minerals, they may often be potentially productive for agricultural purposes.

Some of the best soils for cultivation are those found along river valleys and in a number of mountain basins. The former are generally associated with floodplains, deltas, and the outer slopes of piedmont fans. The Kandy valley is noteworthy as having some good soils of this type. The mountain basin soils, depending on varying climatic conditions, are in places similar to some mid-latitudinal types, which generally respond well to proper treatment. The soils on surrounding uplands with steep slopes are, by contrast, thin and stony and of little agricultural value.

As a vegetative region, the lush equatorial rainforest prevails in Thaipakia and parts of Tali Province. It contains a large variety of trees but concentrations of single species are uncommon. This is one of the factors which interferes with extensive commercial use of the forest. Thick underbrush jungle conditions near some of the major rivers in the Thaipak Lowlands hinder penetration and intensive agricultural use of the land. River valleys in Tali Province, however, have been cleared to a greater degree and some are now intensively cultivated. As precipitation decreases to the north, the tree cover in Hassam, DuBois, and Lopez Provinces becomes sparse and is mixed with shrubs, bushes, and grass. The next vegetative region is that of savanna grass land. Eventually, the grass cover diminishes in height, becomes widely spaced, and finally grades into desert vegetation in the Northern Territory. The eroded edges of the Meseta Sur have varying degrees of tree cover; some more accessible areas have been overcut.

## *5. POPULATION DISTRIBUTION AND SETTLEMENT PATTERNS*

The population distribution and settlement patterns of a country reveal the conditioning

effects of certain physical, social, and economic factors. Agrostan is no exception. Its population distribution is affected by such physical conditioners as temperature, precipitation, soil qualities, slope, and elevation. It is affected by such cultural factors as ethnic or tribal affiliations, attitudes toward mobility, educational level, communications diffusion, transportation, location of industries, agricultural practices, and tenure systems.

### *5.1 Geographic distribution*

Fully half of the population of Agrostan is located in the Kandyland Region, which includes parts of Lopez, DuBois, Morgan, Liberto, and Tali Provinces. This is the demographic and economic center of the country. Southern Lopez is the cradleland or core area of the nation, and Calicut, the capital city, is located there. In addition, the major industrial center is located around Calicut and the greatest amount of commerce and trade in the nation comes to a focus in the Kandy River valley. Agriculture, particularly in the Tali, southern Lopez, and Rico piedmont areas, is comparatively prosperous and supports a sizeable farm population. In addition to this concentration, a fairly large population is to be found in the harbors and along the accessible river valleys of the Atlific Region (Hassam and Rajpur Provinces) on the Coastal Plain. Trade and a favorable agriculture base have fostered settlement in these areas.

By contrast, population in the rest of Agrostan is relatively sparse. To the north, aridity and poor transportation militate against the development of a large population base. Concentrations are found along river valleys or around oases and certain centers where water is available. With the exception of the southern edge of the plateau, the Meseta Sur and Meseta Norte and the Northern Territory all fall into this sparsely populated category. The administrative areas involved would include all or sizeable portions of the following provinces: Lopez, DuBois, Paris, Lo-San-Tho, Bolivar, and Rajpur.

If water is one of the keys in understanding population distribution in the arid north, it must be pointed out that it plays an important part in conditioning the settlement patterns in the humid southeast also. Thus, in the Thaipakia Region (Dewar, Rama and Valencia Provinces), it is the rivers that tend to create the clustering of peoples, since they are the best transportation routes in the area. Consequently, few people occupy the interior areas between the major rivers.

Some of the highland zones in the country contain small concentrations of population in various valleys and mountain basins, but the total number of persons involved is small. These people tend to be isolated and their agricultural operations or other economic activities are more often than not of a marginal nature.

The population is concentrated in large measure within several hundred kilometers of the coast. If the Kandyland Region is added to this area because of its accessibility from the ocean, the population would account for over three-fifths and the land area one-fifth of the Agrostan total. This seaward orientation of population is common to most countries of the world.

### *5.2 Urban-rural distribution*

At the time of the 1960 Census of Population, about three-fourths of the population was rural. By 1970, it is expected that this proportion will have decreased sharply, partly because of considerable migration to urban centers.

The country as a whole is not urbanized to any great degree. In 1960, there were only seven cities with over 50,000 inhabitants (see exhibit I-2-13). Approximately 90 percent of the 221 urban places had populations less than 10,000 and three-fourths had less than 5,000.

In the Provinces, the urban population between 1950 and 1960 had increased about 42 percent, in contrast with 25 percent for the rural population (see exhibit I-2-11). It is expected that this differential is even greater for the period after 1960. Although no official data are

available, there appears to be some general evidence that both Kandyland and the Coastal Plain of Atlifica have been the recipients of large numbers of migrants. The major sources of outmigration seem to have been the Thaipak Lowlands, the Meseta, and the mountainous areas of the country.

Data for the Northern Territory are fragmentary. Recent estimates based on administrative records, however, show evidence that there is some migration to and from the Territory.

Urban places in Agrostan are defined in terms of size or administrative status. For census purposes, all population clusters of 2,000 inhabitants or more, district capitals regardless of size, and three selected places in the Northern Territory are designated as urban. No other criteria, such as urban services or labor force composition, are applied. At present, only urban places with a population of 50,000 or more have legally defined boundaries. Boundaries of smaller places are less rigid; they are established by local officials just prior to the decennial census of population. Plans are under way, however, to establish more exact boundaries so that census enumerators can clearly determine urban-rural residence of the persons they enumerate.

### *5.3 Settlement patterns*

In the Provinces, outside the urban centers, people live in dispersed fashion or in small agglomerations called hamlets. The hamlets owe their origin to such varied factors as availability of water, conditions of land tenure and land use, ethnic affinities, and even defense. The remaining rural population lives in disseminated fashion, on individual holdings. Agglomerations are prevalent particularly in the more arid regions, such as the Meseta Norte or Rajpur. Dispersed settlement is more commonly associated with mountainous and forested regions, such as Morgan and Liberto Provinces on the one hand, and Dewar, Rama and Valencia Provinces on the other. Areas of dispersed population are also found around the major cities of Kandyland.

In the Northern Territory, the settlement pattern is generally of an agglomerated type. Only in the more rugged sections of the Subic Mountains can a dispersion of population be found. People throughout the Territory are affiliated with clans or tribes and live in tribal groups called chiefdoms. Each chiefdom has land assigned to it and each is headed by a chieftain. In addition to the land held by the chiefdoms, there is some government-owned land and land used by large non-tribal commercial holdings, mining camps, and fishing communities.

The tribal people in the Territory live in clusters and normally travel out to their plots of land from these centers. The nomadic tribes of the north do not occupy any permanent housing, but they too live in tribal clusters around the oases on which they settle for varying periods of time.

### *5.4 Population density*

The population density in Agrostan was about 14 persons per square kilometer in 1960 (see exhibit I-2-10). This compares with approximately 22 persons per square kilometer for the world as a whole.

Exhibit I-2-5 shows rural rather than total density. This is the rural population per square kilometer of land surface and is therefore slightly more sophisticated than the gross measure (total density). As might be inferred from the population concentration in the country, it will be noted that the higher values are to be found in the commercialized Kandyland Region. Some of the highest rural densities are found near the large urban centers in that area. Many of the persons involved do not live within the confines of the city proper, but their lives are tied very closely to the city. These people may be farmers who sell produce in the city or have part-time employment there; or they may be engaged in some different type of activity, such as transportation or agricultural processing.

Moderate rural densities are generally found in many areas peripheral to the Kandyland region. This appears, in part, to be the result of the economic pull of the major markets of the core area of the country. The transportation network is not a dense one, but it at least permits movement of goods and peoples through the area fairly easily.

By contrast, many of the lowest densities are found in the arid north and in interior Thaipakia, and reflect the isolation of the inhabitants. These regions are generally hard to reach because of poor travel facilities and routes. This in part accounts for the marginal agricultural activities often associated with such places. Scattered districts with slightly higher densities are generally those which contain some sort of a regional center and thus attract modest population concentrations (see exhibit I-2-17).

It should be pointed out that rural density measures should be used with some caution. They do not exclude large, uninhabited segments of the landscape, such as deserts and marshes. Nor do they reflect type and use of land; for example, high-crop yields or poor soils may not be true indicators of the reasons why the density is high or low in that area.

## 6. *AGRICULTURE*

Agriculture is the dominant type of economic activity in Agrostan. As the population increases, agricultural production must be accelerated. To plan development programs most efficiently, it is necessary to consider such factors as the size of holdings, the system of land tenure, the varieties of crops and livestock, production, and use of machinery.

In the sections that follow, the 1961 data for the Provinces are based on the 1961 Sample Census of Agriculture for the Provinces; there has been no census of agriculture in the Northern Territory.

### *6.1 Holdings*

Agrostan suffers from an imbalance in numbers and sizes of holdings. In 1961, over half the holdings in the Provinces were under 5 hectares, yet they occupied little more than 5 percent of the total area in holdings (see exhibits I-2-21 and I-2-22). On the other end of the scale, only one half of one percent of all holdings were over 500 hectares in size, yet they comprised well over a third of the total land in holdings. There is reason to believe that this situation has changed somewhat since that date; there have been some small proportionate increases in average size of holdings and a decrease in the total number of very large and very small farms. Agrarian reform legislation was adopted recently to decrease the sizes of the big estates; but, to date, it has not been overly successful. The counter argument to redistribution is that the large holding can compete more effectively and efficiently in international and national markets than can the small, and often marginal producer.

Holdings as a general rule tend to be larger in the drier regions (see exhibit I-2-19). This reflects the greater land needs of the extensive types of agriculture practiced in these places. The average size of holding is above 35 hectares in the provinces of Bolivar, Lo-San-Tho, Paris, Rajpur, and Hassam. The Thaipakia region, composed of Dewar, Rama, and Valencia Provinces, has large average sizes also, as a result of the fact that the number of holdings above 100 hectares is proportionately greater than in almost all other provinces; many of these holdings have large segments of woodland. The percentage of area not in holdings is also greater in the semi-arid north and in Thaipakia than it is in the more densely settled regions of Kandyland and Atlifica.

The smallest average size holdings are found in DuBois, Lopez, Tali, Liberto, and Morgan Provinces. This is a result, in part, of the large

concentrations of small holders around the urban centers and the more intensive types of farming practiced in these places. In spite of this, the commercial orientation of agriculture in the area, and its comparatively good transportation network, also helps to foster the development of large holdings. For example, approximately 55 to 60 percent of the area in holdings in Lopez and DuBois are in holdings of 500 hectares or more. These proportions are higher than those for the other provinces (see exhibit I-2-22). The total amount of land involved is also sizeable.

Of the 3,600 large holdings enumerated in the Provinces in 1961, over a third were cattle ranches. Another third were either sheep ranches or specialized in coffee, cotton, or groundnuts (see exhibit I-2-23).

Fragmentation of holdings is a major problem in Agrostan. It is particularly troublesome on small and medium size farms. Data are not available on the average number of plots per holding. In some places, such as Tali, the situation is acute enough so that farmers are forced to spend a great deal of time simply travelling between holdings. These plots are often very small and inefficient to operate. Much land is lost to use because of the border spaces involved. The situation has been particularly troublesome among smallholders in the areas surrounding large cities in Kandyland.

### *6.2 Tenure of land*

Tenure systems of all types are to be found in Agrostan. By far the largest group in 1961 was that of the owners; however, almost three-fifths of them operated holdings under 5 hectares in size (see exhibit I-2-26). The second largest group were the tenants, who operated holdings under a wide variety of arrangements -- for cash, for a share of the production, in exchange for services, or rent-free. No data are available for "squatters" since these were included in the tenant group in the 1961 statistics. Holdings of tenants tended to be small; two-thirds were under 5 hectares.

There were comparatively very few hired managers, but the average size of holding which they controlled was extensive. In the group of large holdings (500 hectares or more), there were about three times as many hired managers as owners. This reveals the fairly widespread practice of employing overseers on large estates.

Tenure in the Northern Territory varies somewhat from the pattern in the Provinces. Although owner-operators are to be found in some areas, tribal ownership of land and livestock is common. Among many of the tribal groups, it is customary to assign land to the members for their use; however, in areas where land is plentiful, members of the tribe are generally free to use any land that is available.

### *6.3 Crops*

Agrostan's tropical location conditions its crop choices in large measure. However, selection of crops is based on other considerations such as markets, transportation facilities, and labor skills. The part of the country with the largest variety of crops grown is Kandyland; this is less a result of favorable soils and climate than it is the markets and commercial orientation of the region. Agrostan has no large agreas in which a monoculture prevails, but in the dry north and the humid and inaccessible southeast, the varieties of crops grown are somewhat more limited.

The types of cash crops grown by large estates on the one hand and those by small holders on the other differ in a number of cases. However, the differentiation is not always a clear one. Thus, maize, rice, wheat, cotton, and bananas are raised by both groups. Coffee, rubber, sugarcane, and sisal are more common to the large holdings (see exhibit I-2-24) and potatoes, beans, and peas are more normally associated with the small producers.

As for distribution, wheat and sorghum tend to dominate in the drier regions of the north and rice in the more humid areas of the south. Maize (corn) is somewhat more widespread. Most vegetables

tend to be grown on small plots in areas near the big cities or in the humid tropics of Tali and Thaipakia; beans and potatoes are most common in the lower slopes of the Rico Mountains or around large urban centers like Calicut. Commercial crops such as cotton, sugarcane, and coffee are associated with the more accessible coast and Kandyland areas; rubber, by contrast, is also obtained in Thaipakia. Crop area in groundnuts is particularly extensive in the provinces contiguous to the Kandy River and in Dewar and Valencia. Bananas are grown in most provinces, with the exception of those in the Meseta Norte. The largest crop areas are also to be found along the more accessible parts of the coast and in Kandyland. The production in Rajpur and Hassam is largely irrigated.

Some of the most important crops in Agrostan, either in terms of area, production, or trade, include maize, rice, wheat, cotton, coffee and rubber, sugarcane, bananas, and groundnuts (see exhibits I-2-25 and I-2-30 to I-2-32).

6.31 Maize. -- Maize is grown on more land than any other crop, either permanent or temporary. With the exception of the dry areas of the northern Meseta and the humid lowlands around Lake Thaipak, the remaining provinces in 1961 all had about 100,000 hectares or more cultivated to maize. Yields in the more arid areas in the north and those in the highland regions were somewhat lower than the national average because of the cooler nights that prevail there; a larger growing season is needed to compensate for such conditions. Maize is often interplanted with beans or dry rice in the south. In the north, it is planted early in the rainy season, about April, and is harvested in September; it is often succeeded by wheat. In the south, it may follow rice during the drier parts of the year. Many varieties of maize are grown; hybrid corn is associated with a few of the more commercialized holdings.

6.32 Rice. -- Rice is a major staple in the diet of the people of Agrostan. It is grown under irrigated conditions on clay soils, particularly in Tali, Hassam, and Rajpur Provinces, and along the middle portion of the Kandy River. Some farm areas along the flood plains, river terraces, and deltas of the streams in Tali even take on monocultural characteristics. Succession cropping is common, with rice following rice; the seasons run from March to July and August to November. Under an alternate crop rotation, rice is grown during the rainy season (April to October) and is followed by legumes and vegetables. Rainfall may be sufficient to provide all the water needed for the rice crop in some areas, but many plots are flooded by using river water. Construction and maintenance of the irrigation systems requires much labor, but yields are fairly high. However, in some areas in the south, persistent cloudiness causes a reduction in the amount and intensity of sunshine, and tends to decrease output.

By way of contrast, upland rice farming is a less intensive type of agriculture; this crop is grown in many parts of southern Agrostan on land which is not irrigated. Plots are often on hilly or sandy land, which is difficult to dike and flood. Semiannual and biennial seeding of rice is common; cropping takes place in rotation with a wide variety of other plants, such as maize, peas, sweet potatoes, cassava, and sugarcane. Yields are lower than those obtained from paddy (irrigated) holdings.

6.33 Wheat and sorghum. -- Large areas of wheat are found on the northern Meseta, in Bolivar, Paris, and Lo-San-Tho Provinces; Rajpur also has a sizeable area cultivated to this cereal. Generally, the southern part of the country has less wheat because the high temperatures and relative humidity make the plant susceptible to a variety of diseases. It is a commercial crop in the northern areas and much of it is grown on large holdings. Among smaller farmers, it is often one of several crops grown during the dry period, particularly on moisture retaining soils. Wheat is generally planted after the rainy season, in October or November, and is harvested in March or April, just prior to the hot dry weather that

precedes the summer rains.

Grain sorghum is primarily a summer crop, sown in May and harvested in September. It is grown particularly in Rajpur, Hassam and Lopez.

6.34 Cotton. -- Cotton is one of the most important commercial crops in Agrostan. Temperatures are uniform and high enough for proper growth in most parts of the country; hence, rainfall is a controlling factor in determining the places where it is cultivated. For optimum conditions, precipitation must be well distributed over the growing season, although a drier period is needed for the balls to ripen for picking. Accordingly, cotton is less prevalent in the extreme south. Lopez, DuBois, Hassam, and Rajpur are the four producing provinces. Culture in the north takes place mainly under irrigation; this is true also of some of the large holdings in the Northern Territory. Planting occurs about the time of the onset of the rainy season, in April and May; the crop is picked in the dry season, generally starting in November.

6.35 Coffee. -- Coffee accounts for almost half of the area in permanent crops. It is an important commodity in the nation's export trade. It is concentrated in the upland areas of Liberto and Morgan and in Lopez Province as well. Cloudy conditions in parts of the Rico Mountains tend to cut down on too much harmful sunlight. Rainfall is fairly well distributed in the major coffee growing areas, and soils are favorable; thus, overall conditions of cultivation are good. Much of the coffee in these areas is grown between 200 and 1,800 meters in elevation. The main picking season runs from about September to February.

6.36 Rubber. -- Rubber is grown both on small holdings and on large estates. The former are more common in Dewar and Rama Provinces and the latter in Tali, although such a differentiation is by no means clear cut. Trees are tapped regularly throughout the year, with the exception of a few weeks during the less rainy period. As a consequence, fairly steady employment is associated with this type of crop.

6.37 Sugarcane. -- Land in sugarcane is both irrigated and non-irrigated. In the case of the former, the cane can be grown independently of the seasons and factories can be run for greater lengths of time, thus cutting overhead costs. Under savanna, wet-dry conditions, cane production is not so easily controlled. It is planted toward the end of the rainy season, in September and October, and requires about 15 months to ready it for the harvest, which takes place from about January to April. By planting several varieties a year with different vegetative cycles of growth, it is possible to extend the harvest season and keep the mills in operation for a longer time. New high-yielding and disease resistant varieties are used in many areas, but average yields for the nation are still fairly low. The major producing areas are in Kandyland and along the Atfilic coast; almost all of Rajpur's production is irrigated.

6.38 Bananas. -- Bananas are also grown as an irrigated and non-irrigated crop. The former type, grown in the dry areas, is less subject to fungus disease. Bananas take about a year to mature, and by varying the ages of the plants, it is possible to harvest almost constantly; this distributes labor requirements more evenly. However, such practices are not usually followed. The perishable nature of the crop requires fairly expensive and efficient storing and shipping facilities. These are available mainly in the Kandyland and Atlific regions. Production in Thaipakia is sizeable but less commercially oriented.

6.39 Groundnuts. -- Groundnuts occupy large areas and are important both as a subsistence crop and commercially as a source of edible oil. The residue, pressed in the form of cakes after the oil is extracted, is used as a livestock feed. Planting takes place at the beginning of the rainy season in June and harvesting occurs in November; a relatively dry period is needed at the time of ripening. Extensive areas cultivated to this crop are found in the Kandy Basin area, in DuBois, Lopez, Liberto, and Morgan; these four provinces accounted for over two-thirds of the area of groundnuts in 1961.

### *6.4 Livestock*

Agrostan has a fairly large animal population which varies by region, and by type of holding. Some farms and ranches raise livestock exclusively for sale, but the majority keep some of their animals for internal use and consumption and sell others. Native, disease-resistant, multi-purpose animals predominate, although the government is undertaking several programs aimed at cross-breeding and general improvement of stock.

6.41 Cattle. -- Cattle predominate among the large producing animals. In 1961 there were roughly four times as many of them as there were sheep or hogs (see exhibit I-2-33). The cattle are multi-purpose types, being used for draft, milk, and meat. Accordingly, their general performance and quality is not up to the standards of carefully bred single-purpose animals. Native strains which are more resistant to disease and high temperatures have been mixed with imported stock to enhance livestock performance.

Cattle are well distributed throughout the provinces, but their numbers are particularly high in the savanna grasslands of the Coastal Plain and the Meseta, as well as in Kandyland (see exhibit I-2-33). Dairy production is mostly small and is concentrated in the milksheds of the large urban centers around the Kandy Basin. The quality of the milk is not high, however, and very little is converted to butter or cheese. Beef animals come, in the main, from the semi-arid areas of the country and from Kandyland; draft cattle are particularly numerous in Tali and Thaipakia. Average size of herd is largest in Rajpur, Hassam, DuBois and Lo-San-Tho.

6.42 Sheep. -- Sheep show a less balanced distribution in Agrostan. Larger numbers are found in the more arid northern areas. Wool is fairly unimportant; the animals are slaughtered in the main for meat and skins. A few ranchers move their herds to higher elevations in mountainous areas during various parts of the year.

6.43 Hogs. -- The Kandy Basin and Tali contain a large hog population. These animals are raised particularly in close proximity to the big cities, which are the major markets. However, home consumption is also fairly high. Hogs are less numerous on the Meseta and in Thaipakia, where they cannot compete with the human population for maize. Animals are native breeds which often thrive under adverse conditions.

6.44 Other livestock and poultry. -- Goats are not numerous. Morgan and Liberto Provinces raise these animals for meat, milk and skins; farmers also produce a locally well known type of cheese as well. They are generally found on poor quality, hilly land. Horses, mules, and asses are widespread. The horses are more numerous and tend to be concentrated to a somewhat greater degree in the north and in the Lopez area. Mules and asses are concentrated more in the central part of Kandyland. Chickens are found in large numbers in all provinces, but are more commonly associated with small holdings, particularly in Tali and the Kandy Basin. The chickens are small-sized native, hardy breeds; egg production is not large.

### *6.5 Production and markets*

Major crops destined for export are shown in exhibit I-2-25. Other than this, output data are not available. There is very little information to indicate the proportions of crop and livestock products sold or not sold off the holdings. Home consumption is naturally higher among subsistence farmers, but it is erroneous to conclude that these farmers do not sell or barter part of their harvest. Data for these operators are, as a rule, harder to obtain and are less reliable than information supplied by respondents on larger holdings.

The nation as a whole consumes all or the greater part of such major crops as wheat, sorghum, peas, beans, and oranges. However, in total bulk, maize and rice were the two leading export crops in 1967, followed by cane sugar, groundnuts, cotton, coffee, and bananas. Since Agrostan is a primarily agricultural country, these exports are

vital for a favorable trade balance. Among livestock products, some quantities of beef and veal were exported; international trade in skins and wool was less important.

Production of most crops could be increased by various means. Yields are generally typical of averages in developing nations; but with better use of fertilizer, insecticides, and seeds, and with modern farm practices, output would rise. Expansion of irrigation agriculture would also raise production levels; a few development projects of this nature are presently under construction. The establishment of more farm cooperatives and of stricter qualitative controls would also have an influence on output, particularly as regards international trade. Another consideration bearing on this subject is the fact that most farmers do not have proper storage facilities. Thus, during good years, surplus crops must be sold, often at a loss. The government is trying to correct the situation; it has constructed several grain storage elevators and has established a marketing agency which purchases and maintains stockpiles of certain staple foods, such as rice and wheat. More large storage facilities in the country are needed, however.

### *6.6 Machinery*

Increased use of machinery would doubtless alter production patterns in the country. It is believed very few farm operations are now mechanized, but the trend toward greater dependence upon machines is definitely increasing. Although mechanization is difficult on the small and often fragmented holdings which are found throughout the country, the success of countries which have made good use of small-scale machinery gives rise to expectations that such developments are possible in Agrostan. At present, however, resistance to introduction of machines by farm labor on the larger holdings, plus lack of capital and repair facilities and unwillingness to change traditional farm practices may all be noted as factors which tend to retard greater use of mechanical energy on the holdings. Some large landowners maintain, however, that a decrease in the number and feed requirements of draft animals, and certain efficiencies achieved by mechanized operations will eventually result in an increased use of farm machines.

### *6.7 Land use*

Almost half of the total land in the Provinces in 1961 was in holdings. Slightly less than one-fourth of the land in holdings was classed as arable (see exhibits I-2-19 and I-2-28). In Kandyland and Atlifica, the proportion in holdings was higher than the national average. It was generally lower in the Meseta Norte, Thaipakia and the Rico uplands, as a result of the existence of forests, marshlands, mountains, and arid areas. The best potential for expansion of agricultural land lies along the middle Atlific Coastal Plain. The pattern of concentration in Kandyland probably would not change to any great degree, however, since land pressure is greatest in that area and the possibilities for expansion of farmland are somewhat more limited.

The area under temporary crops was approximately 10 times the area in permanent crops. Kandyland and Atlifica have comparatively large areas of the latter type. Extensive sections are used for permanent pasture and grazing throughout Agrostan; they appear to be sizeable particularly in the Atlifica region and on the Meseta. Land in woods is high in Tali, Thaipakia, the Rico highlands, and along some edges of the Meseta.

The pattern of land utilization by size of holding indicates that holdings of 100 hectares or more in the Provinces in 1961 controlled approximately two-fifths of the land under temporary crops. On the other hand, they controlled more than four-fifths of the land in permanent crops, half the land in woods, and approximately four-fifths of the land in pasture (exhibit I-2-28). The production of a number of commercial crops, such as bananas, coffee, cotton, rubber, sugarcane, and tea, was dominated by holdings of 500 hectares or more, thus accounting for the large proportion of land under crops (see exhibit I-2-24).

Irrigation is not extensive in Agrostan. It is found mainly along the major rivers which flow into the Atlific. A high proportion of farms obtain water from wells; formally developed large-scale irrigated zones, using impounded water, are not numerous. As noted, certain crops in semi-arid areas, such as are found in Rajpur, are mostly grown under irrigation; these include bananas, oranges, cotton and sugarcane.

Succession cropping is commonly practiced on irrigated land as well as in many areas in the southern part of the country. Double cropping of rice is particularly common in Kandyland, but legumes and vegetables can also enter the rotation. Crop interplanting is also a practice commonly followed throughout the country. The types of mixtures vary a great deal, although certain preferences can be noted in some regions. Many subsistence farmers follow this practice, since it can prolong the harvest and reduce the possibility of crop loss through unfavorable weather conditions and pest attack.

### *6.8 Types of agriculture*

In general, there appear to be eight different types of agricultural operations; two are subsistence types and six are commercial in nature. (The places where some of them predominate are shown in figure 6.) However, there are no agricultural zones which are purely monocultural in character.

6.81 Noncommercial.--The first two types of farming--pastoral nomadism and subsistence--fall into the noncommercial category. Production is mainly geared to internal consumption on the holding. However, this does not mean that there are no sales off the holdings; conversely, it is assumed that small quantities of cash crops are consumed by the commercial farmer, rather than sold.

Pastoral nomadism is common in the semi-arid and desert areas of the Northern Territory. Some crops are grown on oases under certain conditions, but the life of the people is much more closely tied to livestock. The areas within which the nomads can migrate, from water hole to water hole, are fairly well defined; attempts to encroach upon another tribe's lands usually lead to conflict.

Subsistence farming falls into four different subcategories. The first of these, involving slash-burn operations, predominates in Thaipakia and the Subics. Farmers burn the natural vegetation on their land in order to clear it; they then cultivate their plot for a year or two before moving on to new land. Twenty or more years may elapse before the land is again used. Clearings are not planted to one crop, but rather to many crops, sown at different times. Farmers may live in a village and travel to their holdings or else may shift their homes so as to be close to their clearings. Communal land ownership is common.

The second type of subsistence operation, involving the subsistence garden, is one associated with the larger urban centers. Plots are small and often fragmented. Consequently, farmers must look to employment elsewhere during many months in the year. Vegetables are often sold off the holding in the urban markets. Chickens are common on all holdings and some farmers may own hogs as well.

The third type, the intensive subsistence holding, involves dry field agriculture. It is found in the Kandyland region, particularly in association with areas of paddy farming. The land occupied by these holdings is not irrigated often because of slope, elevation, or soil conditions. No crop is dominant, although dry rice and maize are grown on almost all holdings. Many crops, such as groundnuts and cotton, are sold off the holdings.

The general subsistence farm, the last type, is found in many parts of the country. Plots may be fairly large, but the land is poor and the general level of efficiency is low. Many farmers in highland or arid areas may center their operations on animals rather than crops; goats and sheep are common. On flatter land and nearer cities, crops

tend to be more important; however, they are generally types that are not exported from the country.

6.82 Commercial. -- Plantation crop agriculture is one of the most important kinds of commercial farming to be found in Agrostan. It is prevalent in Kandyland, Atlifica and Thaipakia. It has been noted that small holders in these same areas compete with the large plantations in the production of certain crops. Many of the nation's major export crops come from plantations: bananas, coffee, cotton, rubber, sisal, sugar, and copra. Large plantation holdings are often run by corporations rather than individuals. Labor is generally permanently employed and farm operations are almost entirely monocultural.

Paddy, or irrigated rice farming, is classified as the second type of commercial agriculture. Although this kind of operation has many subsistence characteristics, the rice crop is generally regarded as the equivalent of a cash income; much of it is exported from the country (see exhibit I-2-25). Paddy holdings are concentrated mainly in Tali, although they are also found in Hassam and the floodplain of the middle portion of the Kandy River. Plots are constructed with embankments which retain rainwater or else form part of an irrigation system, often with elaborate dams and distribution and drainage channels. As noted, double cropping is common in Tali, with rice following rice. However, many other crops also are used in rotation with rice.

The third kind of commercial farming is that of the large-scale grain holdings (commercial grain farming). These holdings are medium to large size; unlike some plantations, they are generally privately owned and operated. They predominate in the drier areas to the north; the major crop is wheat, although sorghums, maize and legumes are also grown in various rotations. Poor transportation hampers sales of wheat from these regions. Dry farming techniques for conserving soil moisture are commonly practiced here. To the south, the wheat is displaced by maize as the most important cash crop; the former is consumed within the country, whereas large quantities of the latter are raised for export.

The fourth type of commercial farming is the irrigated holding. This category excludes irrigated kinds of operations already described above. The holdings are found mainly along the rivers that empty into the Atlific Ocean. A variety of crops is raised on these holdings: bananas, cotton, maize, vegetables, and fruits. Water is obtained on an individual basis mainly from wells and rivers, since there are few large dams which irrigate extensive areas.

The mixed farm is the fifth type. It consists of a combination of commercial crop and livestock farming; both activities are often closely integrated. Holdings are of medium size and are concentrated mainly in Kandyland. The poorer types of mixed farming operations eventually grade into general subsistence holdings. Animal husbandry on many of these marginal farms is a subsidiary activity to cultivation of crops. In some cases, horticulture may become an important part of the work on these holdings.

The last kind of commercial agriculture is that of livestock ranching. Operations of this kind are found throughout the country, although the larger holdings are generally found in the more arid areas to the north. Beef cattle predominate, but large sheep herds are also common in the provinces of Rajpur, Lo-San-Tho, Bolivar, and Paris. The carrying capacity of the land in some of the drier areas is verv low; in some places, more than 5 hectares per sheep per year are necessary. In the savanna grasslands, however, the situation is much better. The amount of beef and veal produced could probably be increased substantially if better transportation facilities were available; when animals are forced to walk great distances to railhead, there is a substantial loss in weight. Some holdings possess some cultivated land; production in such cases is generally destined for home consumption.

### *6.9 Farm labor*

At the time of the 1960 Census of Population, about 6 out of every 10 persons classed as economically active were engaged in agriculture (see exhibit I-2-40). Although they were reported as

"economically active", it is reasonable to assume that some were "underemployed". In agriculture particularly, underemployment is difficult to determine. One possible way is to associate it with size of holding. For example, as a rule of thumb, it might be estimated that approximately 20 hectares of dry-farmed land or 5 hectares of irrigated land in the Northern Meseta would be minimal for an average family of five people. It may be noted from exhibit I-2-21 that about three-fourths of all holdings in Bolivar, Lo-San-Tho, and Paris Provinces were below 20 hectares; it may therefore be inferred that underemployment rates were high. On the other hand, a figure of 3 hectares might be selected as necessary for a family of 5, in order to maintain an acceptable minimum living standard in some of the more humid areas in the south (paddy farming can be an exception). Using this guide, it can be seen that about 30 to 40 percent of the holdings were under this amount in Lopez, DuBois, Liberto, and Morgan Provinces.

Given these conditions, it is probable that males would seek farm employment elsewhere, during peak periods of demand for labor. If such periods coincided with work needs on their own plots, the women, children and elderly in their families might be able to complete the required chores; this would free the men from their small holdings and permit them to enhance the family income. However, statistics in this field of inquiry are not available.

Although official data are not available, there appears to be a sizeable migration of farm labor during various periods of the year, when work demands are high. For example, workers are needed for planting, harvesting and other operations particularly during the months of April, May, September, and October. During this time, migratory laborers may move from their small Kandyland plots north to Atlifica. There is also seasonal work available, particularly in the Northern Meseta and Rajpur, before the onset of the dry period, when many animals are slaughtered. Temporary employment is less common on large commercial plantations, which tend to employ people on a year-round basis, regardless of the work peaks and troughs. Thus, migratory labor is not as closely associated with such crops as rubber, coffee or copra.

### *7. MINERALS AND ENERGY BASE*

Agrostan is at best only modestly endowed with minerals of commercial value, and little of its production enters into world trade. Copper, lead, zinc, and silver are mined in small operations in the Subic Mountains, but poor transportation facilities and quantitative and qualitative deficiencies in the ore bodies preclude more extensive development. Output from the Subic Mountains is marketed in neighboring Hondzuela. Small copper and manganese deposits are also worked in the Tak Mountains near Warangol Pass, which is located in the Warangol District in southeast Rajpur Province. The Rico Mountains do not have any large mineral deposits of commercial value which are presently exploited.

Among the energy fuels, only petroleum and natural gas hold some promise for the future. This is mainly because the country possesses areas which are underlain with sedimentary rock in which such resources might be found. Current output is quite small. Several wells are now being operated along the western shores of Lake Thaipak and in the El Feser peninsula in western Hassam. Coal is practically non-existent and there are no plans for the present to establish any nuclear reactors in the country. Water power is tapped by several hydroelectric installations located on some of the major tributaries of the Kandy. A large potential in the country is unused, however, because of such factors as distance to consuming centers and high costs of construction of facilities.

### *8. INDUSTRY AND COMMERCE*

Industries in Agrostan fall into two groupings, associated either with modern factories and manufactural operations or with cottage handicrafts. The latter employ more people, often

on a part-time basis, and are more widespread. They may be found in large cities or in hamlets, in mountains or plains and among peoples of varying cultures. They produce a wide variety of goods such as pottery, items shaped from wood, small tools, textiles, processed foods, and jewelry. The modernized larger industries are located in the nation's major cities, which serve as regional or national trade centers. Availability of energy resources, markets, labor, capital, and all of the other locational factors which tend to agglomerate industry, operate here to restrict Agrostan's manufactural base, in the main, to Kandyland.

The biggest concentrations are in the Greater Calicut area. Despite this, the number of manufacturing establishments and total output is quite modest. The major installations, all of which can be classed as light industry, are mainly those geared to food, fiber, and hide processing. Outside this area, there are several small ore smelters in the Tak Mountains; some cement plants along the middle course of the Kandy; and fish processing, ship repairing, and salt extraction operations in several coastal cities. Some large firms operate agricultural holdings in conjunction with their manufacturing operations. For example, the Tali Sugar Company owns a large plantation which is the major source of sugarcane for its factory.

Major commercial activities are largely focused in Kandyland and along the Coastal Plain in Atlifica. The two most important centers for international trade are Calicut and Hankow. Bocay and Georgetown have good natural harbors, but installations and facilities for handling vessels and goods are poor and turn-around time is lengthy. There are also some large regional centers, often with extensive trade hinterlands, at Recife, Asuncion and Croyden. The other commercial nodes are generally much smaller and are fairly widespread throughout the eastern and northern parts of the country.

### *9. TRANSPORTATION AND COMMUNICATION*

The transportation network of Agrostan is not extensive (see exhibit I-2-1). The rivers often serve as the best arterial routeways along the Atlific coast, in the Thaipak Lowlands and in the Northern Territory. Those in the central part of the country are not always navigable during the rainy season. Furthermore, with the exception of the Kandy, the heads of navigation of these streams are located to the west of the base of the Meseta. This precludes the possibility of deep inland penetration by river shipping. The Kandy River is navigable to vessels of moderate draft up to Croyden, however.

The railroads are all of standard gauge, but trackage is not extensive. The main routes were constructed to service and connect the large urban centers; only the Calicut-Ancash line penetrates into the interior. The railroad cars are in large measure antiquated and in need of repair. Service on the lines is poor.

The network of all-weather, first-class highways is not an extensive one. These roads follow river and rail routes and connect the major cities. Some also penetrate into the less accessible northern and eastern provinces. However, large areas are untapped and can be reached only by some second- and third-class roads of poor quality, particularly for motor travel. Those in the central area of the country are usually not serviceable for long periods of time during the rainy season. The Rico Mountains, the Thaipakia forests and the deserts and Subic Mountains of the Northern Territory are particularly hard to reach at any time of the year. Motor vehicle maintenance and repair facilities are limited, off the main roads, and this should be taken into consideration in planning census field operations.

Air transportation is somewhat primitive. All province capitals have small air fields but many modern ground navigational aids are often

lacking. The only two airports served by international lines are at Calicut and Hankow.

Telephone and telegraph systems connect the major cities of Agrostan, but the number of areas reached by such facilities outside of Kandyland is small. Even in the major cities, fewer than one-fourth of all homes have telephones. Services are generally not available after 10 p.m., except in Calicut. Since the entire country is located within one time zone, however, few complications arise in terms of time tables or coincidence of periods of activity and inactivity. Nevertheless, siesta periods are observed predominantly in the north and the hours of the normal working day are, accordingly, somewhat longer.

## *10. POPULATION CHARACTERISTICS*

The most complete source for statistical data describing the people of Agrostan is the 1960 Census of Population and Housing. Some additional data on subjects not included in the census are available from administrative records.

### *10.1 General characteristics*

Information on general characteristics of the population pertains to population growth, urbanization, density per unit of land area, and household size.

10.11 Population growth. -- When the first official population census was taken in 1950, the Provinces of Agrostan had 5.5 million inhabitants. By 1960, the population had grown to 7.1 million, an increase of 28.7 percent (see exhibit I-2-11). Indications are that the population is growing at the rate of 2.6 percent to 2.8 percent a year; by 1970, it is estimated that the population will have reached 9.5 million. This rapid growth is a very important factor in planning the census.

Lopez Province, which contains the capital city, had by far the largest number of people in 1960 -- about 1.7 million. Although it had only one-tenth of the total land area, it had about one-fourth of all the inhabitants of the Provinces (see exhibit I-2-10). Bolivar, which borders the Northern Territory, was the smallest of the provinces, both in population and in area.

Unofficial estimates in 1960 for the Northern Territory place the population of that area at approximately 300,000. Thus, although the Territory occupies about one-fifth of the total land area of Agrostan, it had only about one-twentieth of the total population.

10.12 Urbanization. -- Although the urban population appears to be increasing faster than the rural, Agrostan is still a predominantly rural society; as indicated earlier, roughly three-fourths of the population lived in rural areas in 1960. Rural problems associated with travel, communications, locating boundaries, identifying households and their holdings, and the like, necessarily will have a considerable effect on the census plans.

There were many small urban places (under 5,000 inhabitants) and only seven places with a population of 50,000 or more, the largest being Calicut with 375,000 inhabitants (see exhibit I-2-13).

10.13 Density. -- In terms of density, Liberto, Lopez and Tali Provinces have more concentrated rural populations, on the whole, than the other provinces (see exhibit I-2-10). DuBois and Morgan have moderate concentration, and the remaining provinces are sparsely settled. Figures for individual districts within each province, however, show considerable variation (see exhibit I-2-17). As indicated earlier in the chapter, density measures are conditioned by many physical and economic factors, and should be used with caution. At best, they are only a rough guide for making field assignments and estimating travel and workload.

10.14 Household size.-- The 1960 Census enumerated the population by households. The average (median) number of persons per household was 4.5 in urban and 5.2 in rural areas. The household size provides a general indication of the number of households and some approximation of the number of holdings that might be expected in an area.

### *10.2 Demographic characteristics*

Agrostan has a relatively young population; in 1960, half the population was under 20 years of age. According to statistics compiled from civil registration records, the birth rate in 1967 was about 46 per 1,000 population and the death rate was 13. The mortality rate among infants, however, was considerably higher -- 73 per 1,000 children under 1 year of age (see exhibits I-2-34 and I-2-36). Birth and death rates are key statistics in making population estimates and projections, which are important to persons responsible for decisions concerning food and agriculture programs.

### *10.3 Education*

Of the population 15 years old and over, about half in 1960 were illiterate. The incidence was higher among females than males, and considerably higher in rural (63 percent) than in urban areas (21 percent). Of the school age population (persons 5 to 24 years old), approximately 3 out of 4 urban children and young people were attending school, in contrast with 3 out of 10 rural youth (see exhibit I-2-37 and I-2-38). The literacy level of the population determines to some degree the scope and type of inquiry which can be directed to the rural population.

### *10.4 Employment*

The 1960 Census figures on the economically active population indicate that the unemployment rate for the Provinces as a whole was about 8 percent (see exhibit I-2-39). Although the tabulations did not provide an analysis by age, it is believed that the rate among young adults was particularly critical.

Employment in agriculture was by far the leading occupation group, accounting for about three-fifths of the economically active population. Personal service workers and craftsmen were next with about one-tenth of the total workers in each category (see exhibit I-2-40). The remaining occupation groups contained relatively small proportions of the economically active population.

The effective employment status in the agricultural sector is difficult to determine, partly because of the contribution of unpaid family workers to the operation of the holding. Moreover, as pointed out earlier in this chapter, there is reason to believe that a fair amount of "underemployment" exists in some areas, judging partly from the small size of holdings and productivity.

### *10.5 Housing conditions and facilities*

Housing data from the 1960 Census are shown in exhibit I-2-41. For the most part, conditions and facilities of urban and rural housing differed greatly. Homes of urban inhabitants were relatively small (averaging 2.7 rooms), half had running water, and about the same proportion had electric lighting. In the matter of communications, slightly less than half had one or more radio sets, and almost 1 in 5 had television. By way of contrast, rural dwellings averaged 3.2 rooms, only one-eighth had running water, and one-tenth had electric lighting. The proportions for radio and television, which are important media for publicity and cooperation in a census undertaking, also were much less -- 1 in 5 for radio and 1 in 20 for television.

## *11. REGIONS*

The foregoing sections of this chapter presented a topical overview of Agrostan as a whole. Accordingly, the regions of the country have not been dealt with directly. These areas are complex in character. They may have several different climate zones and types of landforms. Their economies may be varied and their boundaries do not usually coincide with administrative jurisdictions. Nevertheless, these regions break up the nation into well recognized parts (exhibit I-2-6), and they are considered as unified areas by the inhabitants of Agrostan.

### *11.1 Kandyland*

Kandyland forms the demographic and economic nucleus of the country. It is the region possessing

the most favorable combination of population, industries, and agriculture; and the capital city of the country is located in southern Lopez. The Kandy River forms the core around which the economic activities of the area are centered. The region includes the Rico Mountains, the Kandy Depression, Tali, and part of the Meseta Sur. Although the major industries of the country are located in or near urban centers, handicraft activities are also carried on extensively throughout the region.

The agricultural base of Kandyland is varied and large. This reflects the commercial importance of the area to a greater degree than it does the influence of climate and soils. The quality of the farm produce ranks among the best in the country, although substantial improvements can still be made. Crop and livestock yields in the region are well above the national average. Holdings range from very small, particularly around the big cities, to very large in outlying areas. Plantation and paddy agriculture dominate in Tali and many large and medium size ranches and commercial grain farms are located on the Meseta Sur. The Rico highlands tend to have mixed farming. Intensive dry field types of agriculture are more common among the smaller holdings within the Kandy Basin. The region has an excess of farm labor, which is further aggravated as a result of inmigration of persons from other regions. Many small holders, as a consequence, obtain part-time or infrequent employment in the urban centers and also move into other rural areas during periods of peak demands for farm labor.

### *11.2 Atlifica*

Atlifica is made up of that part of the Coastal Plain province which extends from southern Hassam to the Northern Territory. Economic activity centers around the river valleys and agriculture predominates. The southern part is more productive and permits a wider variety of crops because of the higher incidence and dependability of rainfall. Grazing and dry farming are relegated to the northern portion of the region. Irrigation farming is practiced along the major streams; many plantations are located here. There are large clusters of small holdings around the major port cities also. Transient farm labor moves through the southern part of Atlifica during the various planting and harvesting periods, but these people have their permanent homes, in the main, in Kandyland.

### *11.3 The Meseta*

This region includes the Meseta Norte and the northern half of the Meseta Sur; it does not extend into the Northern Territory. The plateau is somewhat sparsely settled, with greater densities in the south. Agriculture is the most important type of economic activity and tends to be increasingly of an extensive nature toward the east and north. Fairly large areas are cultivated to wheat, and grazing is also important. Only in small areas in the better watered Tak uplands and in a few irrigated oases does intensive cultivation take place. Commercial orientation of operations tends to increase in the areas with good transportation. Livestock shipments to Kandyland come to a focus at the railhead at Ancash; the population of the city swells temporarily during the periods when, prior to the advent of the dry season, large numbers of animals are sold off the range. At these times, farm and ranch labor is at a premium. However, during most of the year, the extensive types of agriculture prevailing in the region make few demands on the available labor pool.

### *11.4 Thaipakia*

This region coincides generally with the Thaipak Lowlands. Because of its interior location and physical inaccessibility, Thaipakia tends to have a more primitive economy. Tribal groupings are more common. There appears to be an out-migration of people to Kandyland, but this is partially compensated for by the high population growth rates. Transportation facilities in the area are poor and movement of goods and people

is slow and difficult. Agriculture is largely of the subsistence variety. Slash-burn practices are common and most farmers earn a poor livelihood under rather trying conditions. Commercial crops are mainly rubber, tobacco, cocoa, and oranges. Livestock are not as numerous as in many other provinces; the animals are generally poor and inefficient meat producers. The number of big holdings is not proportionately large. Tenancy is common and contractural agreements do not foster good farm management. Some valuable tropical woods are exported from the region, but poor transportation hinders the development of this trade. Generally, data from this area are less reliable than those obtained from the other provinces.

### *11.5 Northern Territory*

The boundaries of this region coincide with a major administrative division; this is unusual. Yet the boundaries do set aside an area that is less developed, less well-known and less accessible than the area encompassed by the 13 Provinces. In essence, the Northern Territory is an economically backward region which has been untapped by the people to the south, although parts of the Territory are potentially rich, agriculturally.

Migration to and from this area is not large. Tribal affiliations are fairly strong. Transportation is very poor, and data in large measure have heretofore not been available. With the exception of several plantations and some small to medium sized holdings operating irrigated land near the deltas of the major coastal rivers, agriculture is somewhat primitive. Pastoral nomadism is found in the desert in the north. Some fairly large population concentrations can be found in the Subic Mountains; most of these people are subsistence farmers who may either be owner operators or else farmers working on communally held tribal land. Livestock in the Territory often belongs to tribes rather than to individuals. Some mining takes place in the Subic Mountains, but the minerals are shipped into nearby Hondzuela because of the poor transportation network and connections with the provinces to the south.

## Chapter I - 3. ADMINISTRATIVE AND STATISTICAL SYSTEM

### *1. STRUCTURE OF THE NATIONAL GOVERNMENT*

The taking of a nationwide census is a huge task and requires a considerable investment in money, time, personnel, and other resources. In all stages of the census--from planning and enumerating to the analysis of the data--administrators and staff at practically all levels of the government are involved to some degree.

The National government of Agrostan is centralist rather than federalist, in that it exercises supervisory and executive authority over officials of the lower levels of government. It consists of three main branches--the executive, the legislative, and the judicial--with headquarters in the capital city of Calicut, in Lopez Province.

The major administrative divisions of Agrostan are the 13 provinces in the more developed part of the country and the Northern Territory, a relatively undeveloped area to the north. Each of the 13 provinces is divided into administrative units called districts, ranging from 8 to 20 per province; each district is further divided into a number of subdistricts (see exhibits I-2-7 and I-2-17).

The Northern Territory is divided into three zones, with 18 territorial districts. Each district consists of many chiefdoms, which are the smallest administrative divisions (see exhibit I-2-8).

#### *1.1 Executive branch*

The executive branch of the government consists of the President, his Prime Minister and the Council of Cabinet Ministers, who are responsible for administering the affairs of government through seven ministries.

1.11 The President and Prime Minister.--The Chief Executive of the government is the President, who is elected for a 4-year term and may be re-elected for one additional term. The President, summons and dissolves the Legislature on advice of the Prime Minister. All executive action is taken in the President's name and he must enforce all legislation. However, the President's power is weakened by the requirement that his public actions be countersigned, so that responsibility for acts of the government actually rests with the minister or other official who countersigns the act. In practice, the President exerts considerable personal influence over his officials.

The executive power of the government rests with the Prime Minister, the Cabinet, and the civil and military bureaucracy. The Prime Minister has the ultimate power of appointment, investigation, and review. He nominates his own Cabinet Ministers from among the elected members of the legislature, who are then appointed by the President. The Prime Minister also has the power to appoint and dismiss high level civil servants who serve as permanent undersecretaries and heads of departments in the various ministries. The Prime Minister must keep the President informed on all domestic and international matters of policy. He and his government are responsible for presentation of the annual budget, in the President's name, to the Legislature.

In addition to the Ministries, there are several other independent government organizations under the jurisdiction of the Prime Minister, such as the Public Relations Department, the Civil Service Commission and the Department of Public Works.

1.12 Cabinet Ministries.--Each of the seven Cabinet Ministries (see exhibit I-3-1), is organized in a similar manner; that is, with a Minister's office having authority for policy supervision, an Undersecretary's office having powers of administrative supervision, and a number of departments, bureaus, and offices having

responsibility for a specialized function. For example, the National Statistical Office, which is responsible for censuses and for compilation of the basic statistical series of the government, is part of the Ministry of Economy.

To conduct national affairs in the provinces, many of the Ministries maintain offices at the province level and delegate authority to their province officials (and to the Territorial Governor, in the case of the Northern Territory) to carry out their work. For example, the Ministries of Agriculture, Economy, and Health, Education and Welfare, all have province office staffs who work with the province governors in conducting the business of the Ministries at the province level.

The same Ministries which maintain staffs at the province level also have offices or agents at the district level to conduct Ministry business. These Ministry representatives work with the top official of the district government, in much the same manner as Ministry officials at the province level work with the governor. District agents for the Ministry of Agriculture and the Ministry of Economy in the provinces will probably be utilized in various ways to assist the National Statistical Office in carrying out the decennial census of agriculture, particularly during the enumeration stage. Since the Ministries do not as yet maintain their own offices or agents in the Northern Territory however, the Territorial District officials and their assistants will probably be utilized for similar assignments.

### *1.2 Legislative branch*

The legislative branch of the government is the National Legislature which is elected by the people. Members are elected for 4-year terms.

### *1.3 Judicial branch*

The judicial branch of the government consists of a legally constructed system of courts, with three levels of courts--lower courts, appeals courts, and the Supreme Court. Rulings of the Supreme Court are considered final in judicial questions that come before the court.

## *2. STRUCTURE OF GOVERNMENT IN THE PROVINCES*

### *2.1 Province level*

The government of each of the 13 provinces is administered by a Governor, who is appointed by the President on recommendation of the Minister of the Interior and the Cabinet. Thus, the National Government maintains authority over national affairs in the provinces through the ministry offices and over local affairs through the appointed governors and lower officials. The province governor is directly responsible to the Minister of the Interior for the performance of governmental functions, inasmuch as he represents the central government in the province. He is also responsible for the general administration of province affairs through his administrative and technical staff, in such matters as local taxes, schools, roads, and other local matters.

The governor is also required to work closely with the province officials of the National Ministries in administering the national services in his province. This is done on a cooperative basis since these officials are directly responsible to their own Ministries and are not part of the province government.

### *2.2 District level*

Within the provinces, the next level of administrative units is the "district," of which there are 172 in the 13 provinces. Executive authority in each district rests with a commissioner, appointed by the Minister of Interior. The commissioner is directly responsible to the governor for carrying out the policy of the National Government and for the administration of district affairs. Similar to the governor, the commissioner works with the Ministry agents at the district level on a cooperative basis, in administering national services.

### *2.3 Subdistrict level*

The primary administrative unit in the provinces is the "subdistrict," a subdivision of the district. There are 975 subdistricts in the 13 provinces. The highest government official in the subdistrict is a magistrate, appointed by and responsible to the Governor, through the District Commissioner. The magistrate is responsible for carrying out both national and provincial government policy at the subdistrict level and for the administration of local affairs in the subdistrict.

Urban places of 50,000 or more population have an urban magistrate and their government is separate but not independent of the district government. The smaller urban places, along with the rural areas in a subdistrict, are administered by the subdistrict magistrate. In the administration of government affairs, both urban and subdistrict magistrates are under the jurisdiction of the district commissioner.

As described in chapter 2, the predominant settlement pattern in the provinces is one of dissemination. Farmers generally live on their holdings, whereas nonagricultural workers live in urban places and smaller agglomerations called hamlets. However, in a few subdistricts, farmers live in small clusters where they have kitchen gardens next to their houses while their fields and other farm lands lie beyond the cluster.

For the most part, the tribal system has broken down in the provinces except in the Southeast Lowlands, where there are a few hamlets headed by chieftains. In these places, the chieftains speak for their tribes regarding administrative matters and are under the jurisdiction of the subdistrict magistrate, but are not part of the official government system.

### *2.4 Enumeration areas for the 1970 Censuses*

For the 1970 Population and Housing Censuses, subdistricts will be divided into "enumeration areas." It is estimated that there will be around 12,000 rural enumeration areas of roughly 500 persons each and 3,000 urban enumeration areas of approximately 1,000 persons each (where the population is more concentrated and there is less travel). Taking of the census in these 15,000 enumeration areas will be administered through the various levels of government, either directly or indirectly.

## *3. STRUCTURE OF THE TERRITORIAL GOVERNMENT*

The Northern Territory is a relatively undeveloped section of the country. To date the territory has not been included in the previous population and agriculture censuses of Agrostan and there is little statistical information available for it. The chief executive of the Northern Territory is the Territorial Governor, who is appointed by the President, on recommendation of the Minister of the Interior and the Cabinet.

### *3.1 Territorial level*

The Territorial Governor is directly responsible to the Minister of the Interior for the performance of governmental functions, as he represents the central government in the Northern Territory. The seat of government in the Territory is in the largest city, Zanzi.

The Territorial Governor is also responsible for the general administration of territorial affairs through his administrative and technical staff in such matters as local taxes, schools, roads, and other local matters. In addition, the governor and a small, specialized staff are responsible for carrying out the work of the National Ministries in the Northern Territory. As yet, the National Ministries have not established offices or appointed agents in the Northern Territory to handle the national services.

### *3.2 Territorial district level*

Within the Northern Territory the next level of administrative units is the "territorial district." Recently, 18 territorial districts were set up in preparation for the 1970 Censuses. Executive authority in each district is exercised by a marshal, appointed by the Minister of the

Interior. The marshal is directly responsible to the Territorial Governor for carrying out both national and territorial government policy at the district level and for administration of local affairs in the district. From time to time, the marshals and their assistants may be called on to perform work for the National Ministries, under the direction of the Territorial Governor. It is very likely that the marshals will have a major role in the taking of the 1970 Censuses.

### *3.3 Chiefdom level*

Tribal living still prevails in the Northern Territory and most of the people are affiliated with tribes. One or more tribal groups make up a chiefdom, each with its assigned land area and each headed by a chieftain. Several chiefdoms constitute a territorial district. However some districts contain public lands which can be used for grazing or where people can settle and claim the land after a specified time. Also, some districts contain land and small settlements of people not affiliated with any tribe; such as, communities associated with government-owned experimental buildings, and with mining, fishing, or trading.

The chieftains are chosen by their own tribesmen to direct their internal affairs and also to be the administrator for national and territorial government policy within the chiefdom, under the authority of the district marshal. People who are not associated with chiefdoms are under the jurisdiction of the district marshals.

### *3.4 Enumeration areas for the 1970 Censuses*

In 1970, the Northern Territory will be included for the first time in the population and housing censuses. For purposes of this census, a chiefdom will ordinarily constitute one enumeration area (EA); large chiefdoms will be assigned to several enumerators. Population not associated with chiefdoms will be organized into Special EA's. All levels of government in the Territory will probably be called on to assist in the taking of the census, either directly or indirectly.

## *4. THE NATIONAL STATISTICAL OFFICE*

The national statistical system of Agrostan, as in most countries, is centralized, with responsibility assigned to one statistical agency. Although many government agencies in Agrostan collect some data for internal use, and in a few cases for publication, the basic statistical series of the country are collected and compiled by the National Statistical Office (NSO).

The NSO is the single government agency most deeply involved in a census. Due to scarcity of trained statisticians, its resources usually have to be shifted to concentrate on projects associated with the census that is being undertaken at the time.

### *4.1 Establishment and authority of the NSO*

The NSO was formally established, under the Census and Statistics Act of 1948, as part of the Ministry of Economy. Before 1948, there was no formal arrangement for collecting and publishing data.

Under the law establishing it, the NSO is required to conduct a combined population and housing census every 10 years. The first census, mainly a population census, was taken on 1 May 1950. The second, taken on 1 May 1960, was a combined population and housing census. The third, to be taken as of 1 May 1970, will be a combined population and housing census. The NSO has gained most of its experience in the area of population statistics.

In 1953, the Census and Statistics Act was amended to authorize a decennial census of agriculture and decennial economic censuses. The first agricultural census was taken in early 1962, covering the year 1961. Planning is under way for the second decennial census of agriculture.

### *4.2 Range of activities*

The NSO performs the full range of activities associated with statistical operations, including both major censuses and current surveys. These

activities include the collection, processing, analysis, and publication of statistics; development of standards dealing with concepts, classification, and methods; coordination of statistical activities through appropriate legislation and an administrating facility; training of personnel; and international cooperation in statistics. In its role as the coordinating office for the statistical activities of other government agencies, the NSO attempts to minimize the duplication of data-collection efforts within the government.

The major census programs for which the NSO is responsible are the decennial censuses of population and housing; the decennial census of agriculture; and the decennial economic censuses. In addition, the NSO collects information on such topics as employment and unemployment; prices of selected items of foodstuffs, housing, and clothing; production for selected crops; and the amounts processed of cotton, coffee, tea, sugar and sisal.

### *4.3 Personnel*

To carry out its statistical programs, the NSO requires a trained staff of both professional and nonprofessional personnel.

4.31 Professional staff.--The professional staff includes both subject matter and procedural specialists. Although they are specialists in their fields, it is important for each group to be familiar with the work of the other group.

Subject matter specialists are skilled in the concepts, research, and analysis relating to particular areas of inquiry, such as agriculture or population. They determine the type of information to be collected and the questions to be asked, prepare enumeration instructions, set up specifications for editing and coding, determine methods for computing and estimating derived figures, review the final data, and prepare the reports. In addition, the subject matter specialists need to develop an understanding of the techniques used by the procedural specialists so that they are able to make sound decisions for the efficient carrying out of a statistical project.

Procedural specialists on the other hand are skilled in such procedures as map preparation, sample selection, editing and coding, or data processing. In addition, they need to become familiar with the subject matter on which they are required to work and develop an understanding of the processes in which the subject specialists are engaged, so that they may make intelligent decisions based on subject matter knowledge.

Consequently, the distinction between subject matter and procedural specialists is not always clear-cut. In fact, it is not uncommon for a single professional person to direct a statistical project from its planning stage to its publication. As the demand for statistical services increases and as the NSO acquires more experience, it is hoped that specialization in the NSO professional staff can be increased.

4.32 Nonprofessional staff.--The nonprofessional staff of the NSO includes clerks, typists, operators of tabulating machines and printing equipment, other persons who perform duties of a subprofessional nature, and their supervisors. The full-time staff of employees in this category must be greatly expanded when a full-scale census is taken.

### *4.4 Organization and functions of the NSO*

In addition to the professional and nonprofessional staff, the NSO has the services of an advisory group, the National Statistical Council, to provide guidance to the Director of the NSO in determining what information to collect and how to collect it.

The functions and personnel of the NSO are organized into three departments--the Department of Economics, the Department of Censuses and Surveys, and the Department of Services. Although the duties of each department are substantially different, there is a need for communication and coordination between them, particularly when carrying out a major statistical project such as a decennial census. These departments are, in

turn, organized into ten divisions. The divisions are subdivided into sections which may be further broken down into subsections, if the activity warrants specialization (see exhibit I-3-2).

4.41 Director.--Overall authority for the administration of the NSO program is vested in the Director, who reports to the Undersecretary of the Ministry of Economy. The Director is a member of the National Statistical Council and initiates many of the recommendations for new projects.

The Director is assisted in administering the NSO programs by his two top assistants, the Principal Technical Adviser and the Assistant Director, who report directly to him.

4.42 National Statistical Council.--The Council is made up of representatives of various government and nongovernmental agencies concerned with the collection and use of statistical data. Its primary purpose is to establish priorities for existing statistical programs, to make recommendations concerning them, and to suggest new programs needed by the country. A major matter for the Council's consideration at this time is the content and scheduling of the 1970 Population, Housing, and Agricultural Censuses.

4.43 Principal Technical Adviser.--The major functions of the Principal Technical Adviser are to assist the Director by advising on statistical programs, coordinating the recommendations of the various departments, and evaluating the statistical activities of the NSO. He attends the National Statistical Council meetings but is not an official member. The adviser's staff includes a sampling technician who serves on a consultant basis. The Technical Adviser has been designated by the Director as chairman of the working groups to plan for the 1970 Censuses.

4.44 Assistant Director.--The major function of the Assistant Director of the NSO is to serve as Acting Director when the Director is absent. In his regular assignment, he deals directly with the Department Heads on NSO programs. The Chiefs of the ten divisions report to the Assistant Director through the Department Heads. However, there are a few divisions where the Department Heads also serve as Division Chiefs, because there are not sufficient qualified personnel available to fill all the Division Chief jobs.

4.45 Administrative Office.--Under the direction of the Chief Administrative Officer, the Administrative Office of the NSO has responsibility for matters relating to budget, personnel, payroll, equipment, and the like. The Chief Administrative Officer relieves the Director of the burden of many administrative details, even though he reports directly to the Assistant Director.

4.46 Information Office.--Under the direction of the Chief Information Officer, this office is responsible for maintaining the NSO library, answering requests for information, distributing reports, publicizing major statistical programs, and dealing with the public. The Chief Information Officer reports directly to the Assistant Director.

4.47 Department of Economics.--This department of the NSO is made up of three divisions, handling three major areas--foreign trade, prices and cost of living, and transportation.

The Foreign Trade Division extracts information from the customs declarations and publishes quarterly reports on the value and quantity of exports and imports. In addition, the staff compiles and publishes monthly indexes of the total value and physical volume of exports and imports.

The Division of Prices and Cost of Living conducts a small sample survey in the Calicut Metropolitan Area to collect data on prices of selected items of foodstuffs, housing, and clothing; and on family expenditures and consumption.

The Transportation Division is concerned with statistics relating to railroads, international maritime traffic, coastwise traffic, and traffic accidents. The statistics are compiled from administrative reports and are published quarterly.

4.48 Department of Censuses and Surveys.--This department consists of the three divisions responsible for the three areas in which periodic

censuses, as well as some current surveys, are conducted--population and housing, agriculture, and business and industry. The respective division not only plans and designs its own questionnaires, but also performs manual editing and coding functions, performs clerical operations not accomplished in the data processing, analyzes the tabulated results, and prepares the written reports.

The Population and Housing Division plans and carries out the decennial censuses of population and housing, the first of which was taken as of 1 May 1950. Planning has started for the third census to be taken on 1 May, 1970. Another major responsibility of the Population and Housing Division is the compilation and publication of vital statistics--births, deaths, marriages, and divorces. The Vital Statistics Section compiles the data quarterly from administrative reports submitted by the Civil Registry offices. The Vital Statistics Section also compiles statistics on international migration from information supplied to them by the Ministry of Justice. The information covers age, sex, nationality, occupation, country of origin, and destination. Since 1968, the Household Surveys Section has been conducting a nationwide manpower survey to determine the extent of employment and unemployment.

The Agriculture Division has responsibility for planning and conducting the decennial censuses of agriculture, the first of which was taken in 1962, covering the 1961 crop year. This Division also conducts an annual survey of the larger wheat holdings to provide current information on wheat production. This survey program was started in 1965 and may be considered as an extension of the 1961 Sample Census of Agriculture.

The Business and Industry Division has the responsibility for conducting the decennial economic censuses, the first one of which was taken in 1965. Agrostan's first economic censuses were limited to manufacturing and trade. When the 1975 Economic Censuses are taken, it is planned to expand considerably to cover the fields of mining and quarrying, manufacturing, wholesale and retail trade, services, and production and distribution of electricity. Information will be obtained on such topics as type of business or industry, number of workers, and amount and value of products.

The only statistics being compiled currently by the Business and Industry Division are the monthly figures on the consumption of electricity, as reported by the distributors.

4.49 Department of Services.--This department consists of four divisions which provide the services required for carrying out the programs of the other two departments--the Department of Economics and the Department of Censuses and Surveys. These services range from the preparation of maps for the enumeration in censuses and surveys to the publication of results.

The Geography Division is responsible for preparing the census maps of Agrostan, and for maintaining a master set of maps showing the current administrative divisions of Agrostan and the location of places defined as urban in the latest decennial population census. Where necessary, the Division is responsible for making field studies for the purpose of accurately fixing the boundaries of provinces, districts, and subdistricts. For the 1970 Censuses in the Provinces, the Division will provide maps of the provinces, districts, and subdistricts (and enumeration areas) for use of the field staff. For the Northern Territory, the Division will work with the local marshals and chieftains to prepare sketch maps of inhabited areas not associated with a chiefdom. The Geography Division works closely with the National Cartographic Service, which has the responsibility for compiling base maps.

The Field Operations Division is responsible for the collection of data through personal visits of enumerators. This Division is also responsible for the training and supervision of the enumerators and for receipt and control of all enumeration materials. The Field Operations Division participates in all census planning concerned with field

enumeration. In collaboration with the subject matter specialists, this Division conducts pretests and evaluation studies. In large-scale projects, such as the periodic censuses, the Field Operations Division must establish temporary census offices throughout the provinces and in the Northern Territory to carry out the field operations on a local basis and to hire and train local enumerators.

The Machine Tabulation Division transcribes the coded data to punch cards and tabulates the information. The Division works closely with the subject matter specialists at various stages in the planning to assure accurate interpretation of the concepts and efficient use of the equipment. This Division has two 80-column card tabulators, three sorters, and a large number of manual punch machines. However, negotiations are under way for the purchase of an intermediate-size computer for use in the 1970 Censuses.

The Publications Division translates the table worksheets into formal tables, arranges them in a form suitable for publication, and publishes the results. The Division also designs and prints the questionnaires and related forms.

### *4.5 Collection of data by ministry agents*

In the interim periods between major censuses, when there is no large field organization for data collection, province and district ministry agents are often requested to collect current information under the direction of the NSO. Representatives of the Ministries of Agriculture and Economy are most often pressed into this service and are sworn in as "special agents" of the NSO for this purpose. For the 1970 Censuses, it is expected that many of these agents will have a specific role--in the preliminary field operations as well as during the enumeration. Other Ministries also, from time to time, request their agents to collect various types of data, relating to the particular subject matter areas for which they are responsible.

## *5. 1961 SAMPLE CENSUS OF AGRICULTURE*

The 1961 Sample Census of Agriculture, taken in early 1962, was Agrostan's first agricultural census. It was a sample census which produced estimates for each of the 13 Provinces. The Northern Territory was not included because of the cost and technical difficulties involved. In a limited way the 1961 Sample Census of Agriculture followed the program which was proposed by the Food and Agriculture Organization of the United Nations, and for a first-time effort, was generally considered adequate. Many important statistics, such as average size of holding, tenure, and amount of arable land, were available for the first time. Although some of the data had a relatively high sampling error, they still were useful for many purposes. Also, since the major problems of conducting an agricultural census were identified, efforts will be made to minimize them when the next agricultural census is planned.

### *5.1 Authority for the Census*

Because it was widely recognized that an agricultural census was needed to provide benchmark statistics for measuring Agrostan's future agricultural development, the Census and Statistics Act of 1948 was amended in 1953 to authorize the taking of an agricultural census on a decennial basis. Responsibility for planning and carrying out the agricultural census was assigned to the NSO by the National Legislature of Agrostan. Despite the urgent need for agricultural statistics, especially as a basis for formulating agricultural development programs, the necessary funds and trained personnel were not available for undertaking an agricultural census until 1961.

### *5.2 Major items covered*

Emphasis in the 1961 Sample Census of Agriculture was on basic statistics such as number, size, area, and tenure of holdings; land utilization; area in crops; production for selected major

crops; and livestock and poultry inventories. These data were available only at the National (excluding the Northern Territory) and Province level.

5.21 Size of holding.--Information was obtained on the total area in the holding and the area under crops.

5.22 Tenure.--Information was obtained on tenure for all holdings; that is, whether the holder was the full owner, owner-tenant, manager, or the tenant of the holding he operated.

5.23 Crop area and production.--Area in crops was asked for all temporary and permanent crops, but production was limited to those crops which were considered important--wheat, sorghum, rice, cotton, maize, and oranges.

5.24 Land utilization.--Information was obtained for six categories of land utilization. Holders were asked for the area of land in temporary crops; land in plowable pasture, land idle, fallow, or on which there was crop failure; land in permanent crops; permanent pasture or grazing land; wood or forest land; and all other land in the holding.

5.25 Livestock inventories.--Data were collected on total numbers of livestock of several species, number of chickens, and total number of other poultry. Information was not collected on the ages of the livestock or the classes of other poultry. The 1961 Census did collect information on the number of cattle and sheep sold, the number lost through disease, and the number treated for disease.

5.26 Capital expenditures and amount of outstanding debt.--The inquiry on capital expenditures included questions on amount spent for hired labor or equipment, seeds and fertilizers, feed, and transport. The question on outstanding debt called for separate amounts by government and private sources.

5.27 Characteristics of the holder.--The only personal characteristics obtained in the census were age and sex of the holder.

### *5.3 Procedures used*

The 1961 Sample Census of Agriculture was taken in early 1962, covering the 1961 crop year, for Provinces only. It was taken independently of the 1960 Population and Housing Census. Large holdings (estates and plantations of 500 hectares or more) were treated as a separate universe and were enumerated on a 100-percent basis. Coverage of the small holdings, which made up the majority of holdings, was on a sample basis. Information on all holdings was collected by personal enumeration.

### *5.4 Level of published data*

Published data from the 1961 Sample Census of Agriculture consist of national totals, excluding the Northern Territory which was not covered in the Census, and data for the 13 Provinces. The sample was not designed to provide reliable estimates for districts or other smaller areas.

## *6. CURRENT AGRICULTURAL STATISTICS AND RURAL DEVELOPMENT PROJECTS*

One of Agrostan's most pressing needs is for a coordinated system of continuing agricultural surveys and statistical programs which will provide current information on agricultural production and on utilization and marketing of agricultural products. Due to lack of adequate resources, the NSO so far has been able to make only token progress in this direction, with the introduction of one continuing annual survey and one program, from administrative records, that provides some limited statistics periodically on major agricultural products.

An even more urgent need for Agrostan, pointed up by data from the 1961 Sample Census of Agriculture, is for organized government programs of all types--research, service, regulatory, and others--which would increase agricultural production and improve the economic status of farmers. Prior to the first agricultural census, Agrostan had little in the way of agricultural development projects, although a beginning had been made. In

the past few years, the government has expanded the existing projects and introduced a few others, designed to help the agricultural sector of the economy. Efforts are being made to integrate these projects into a planned program of agricultural development, and it is expected that other needed projects may be added from time to time.

### *6.1 Current agricultural statistics*

The NSO's current agricultural statistics, which are described below, are minimal. However, the NSO is hopeful that after the next agricultural census is taken, a program of current surveys will be developed which will produce reliable current data. It is expected that the plans for such surveys will be included as an integral part of the overall planning for Agrostan's second census of agriculture.

6.11 Annual wheat survey.--Because of the importance of wheat as a major crop, the first annual agricultural survey was instituted after results of the 1961 Sample Census of Agriculture were analyzed. At the request of the Ministry of Agriculture, the NSO conducts an annual sample survey, as an extension of the agricultural census, to update the census data on wheat production and to collect additional information which would provide a basis for action to improve production.

The survey includes all large holdings of 200 hectares or more which reported at least 10 hectares of wheat in the 1961 Census. The 1961 Census included all holdings of 500 hectares or more and a sample of holdings of 200 to 499 hectares. The Agricultural Agent is responsible for "updating" the sample by reporting to the NSO all large holdings of 200 hectares or more. These are added to the sample in the appropriate category.

The survey, which was started in 1965, is taken during the month of May of each year, shortly after the crop has been harvested. Under the direction and supervision of the NSO, agents of the Ministry of Agriculture visit the holdings to collect the information. Included in the topics for inquiry are: area in wheat, amount of wheat harvested, type of power and equipment used in harvesting the crop, and use of chemical fertilizers and irrigation.

After data are tabulated by the NSO, the Ministry of Agriculture issues the "Annual Wheat Report." The report gives the current information relating to wheat production and a comparison with the data for the previous year. The report properly points out the limitations of the data regarding coverage of holdings.

6.12 Annual reports on processed agricultural products.--Agricultural products such as cotton, sugar, coffee, tea, sisal, and rubber, are processed outside the home. Throughout the periods that the various processing plants are in operation each year, processors are required to report regularly to the Ministry of Economy on the quantity processed. National totals for the six specified crops are compiled and published annually.

### *6.2 Agricultural development projects*

All the agricultural development projects now in existence are described below, along with any available data which reflect the impact of these development programs on agriculture. However, current data on the status and effects of the projects are sketchy, inasmuch as they are compiled from administrative records. For many of the projects, there is no effective authority to carry them out as planned. Furthermore, record-keeping is not mandatory, so the data supplied from these sources are incomplete and lack comparability from area to area. Nevertheless, they do serve as indicators of progress in agricultural development in Agrostan.

6.21 Grain improvement.--Under the sponsorship of the International Seed Testing Association, a private organization, a research project is being conducted in selected areas of Agrostan to develop better varieties of rice, wheat, and corn. District agricultural agents assist the Association by conducting demonstration projects to provide

information to agricultural holders on improved varieties, better methods of seed selection, and improvements in production practices to increase yields. Free seed is provided to holders who are willing to participate in the program.

6.22 Land reform.--The Ministry of Agriculture carries out the provisions of the Land Reform Act of 1962. This program has a two-fold objective--to break up the very large holdings with large amounts of undeveloped land and to consolidate the smaller ones. It also seeks to decrease fragmentation by encouraging holders of several small parcels of land to consolidate them into one compact holding through sale or exchange. The ultimate objective of the program is to achieve a more efficient use of the land and a more equitable system of land tenure so that the land will eventually become the basis of economic stability for the man who works it. Administrative records show that since the passage of the Land Reform Act, about 75 large holdings, including some of several thousand hectares, have been subdivided. However, information on the effect of the Land Reform Act on the number and structure of large and small holdings cannot be determined except through a survey of all holdings.

6.23 Livestock disease control.--The government in 1961 and 1962 inaugurated several projects for control of disease in livestock. The activities are carried out by the veterinary agents of the Ministry of Agriculture. At the present time, the most important of these projects is the periodic treatment of livestock, for which some data are available from administrative records. It is roughly estimated that about 60 percent of all livestock in the country are now in disease-free areas.

6.24 Plant disease control.--Important technical research is under way in the Ministry of Agriculture's Research and Experiment Stations for insect and disease control in certain crops--such as finding a new variety of sugarcane resistant to mosaic, wheat varieties resistant to rust, and tobacco resistant to blue mold. Agricultural agents are responsible for communicating the findings of this technical research to the agricultural holders. The research is still in its beginning stages, with many projects started but not completed.

6.25 Irrigation and drainage.--The Ministry of Interior is developing a long-range plan for irrigation and drainage of several types of land--land suitable for irrigation development; land offering possibility of reclamation through drainage; and land badly in need of a larger water supply during the dry seasons of the year, for both human and livestock use. The government's policy of attempting to supply water and at the same time limiting the amount which can be supplied to any one landowner, is to prevent benefits from accruing to a few.

In the next 2 years, the government plans to expand the Kandy River Irrigation Project and undertake several others which are badly needed. From administrative records on consumers, it is estimated that the Kandy River Irrigation Project, which is the main project in operation at present, is serving approximately 20,000 water users. Engineering studies are being conducted, and first priority will be given to a project utilizing the Rio de Oro and Cuando Rivers, which would serve several provinces in the western part of the country. Several large catch-basin types of reservoirs have been constructed in the arid sections of the country to store water.

Since drainage is a complementary problem, cultivable land will be drained, as an integrated part of the new irrigation projects, to prevent the loss of thousands of hectares due to waterlogging and salinity. These conditions occur in irrigated lands when drainage requirements are neglected. In swampy areas, or where special flood conditions exist, a system of drainage canals is being constructed to reclaim large tracts of potentially fertile agricultural land.

6.26 Soil conservation and increased production.--The Soils Division of the Ministry of Agriculture is working on a program to promote soil conservation in Agrostan. Agricultural agents

are presently teaching agricultural methods which contribute to soil conservation--crop rotation, cultivated fallow (for control of weeds and storage of moisture), soil fertility programs, use of cover crops, contouring, and terracing. For crops which must be grown on slopes, terracing and contour plowing, planting, and tillage are encouraged to minimize erosion. For steeper slopes and hillsides which will be removed from agricultural use, a program of reforestation is planned.

One aspect of the conservation program is to increase agricultural production through increased mechanization--the gradual replacement of hand tools by animal-drawn and tractor-powered machinery and tools. The government encourages small groups of holders to buy and use agricultural equipment jointly; it also provides loans, for the purpose of buying such machinery, to individual holders of small- and medium-sized holdings or to cooperatives serving such holdings. Changes in the traditional pattern of the use of human power, however, are expected to be difficult to achieve. Through educational programs and demonstrations by agricultural agents, by farm machinery schools and by manufacturers of farm machinery, farmers are being taught the benefits of mechanization, how to use the machinery properly, and how to make minor repairs.

Another project to increase agricultural production concerns fertilizers, insecticides, and fungicides. Experiment stations are continuing their research projects with regard to fertilizer formulas, methods and times of application, soil deficiencies, and benefits from fertilization of specific crops.

To offset the inadequate supplies of fertilizers, insecticides, and fungicides which are generally imported, the government is sponsoring construction of a "pilot" plant for domestic manufacture of these materials. Distribution stations to provide fertilizer and insecticides at small cost to the farmers, are now in operation in a number of districts where cotton, wheat, rice, coffee, and citrus fruits are important crops.

6.27 Marketing, storage, and transportation.--The Ministry of Agriculture has a market news reporting system which provides prices of agricultural products to both buyers and sellers. Efforts are being made to improve food distribution and marketing through financial assistance to marketing cooperatives and by encouraging a gradual reduction in the role of large municipal retail markets. Such markets are characterized by waste and unsanitary conditions and inconvenience to the farmer in having to sell his products directly to the public. As with the plan for mechanization, it is expected that changes in the traditional pattern of food distribution will come about very slowly.

A grain storage project was initiated by the government in 1959 to reduce losses of products between the farmer and the market and also to aid in stabilizing grain prices. Two grain storage elevators, each with a capacity of over 50,000 tons (one for rice and one for wheat) have already been built near the seaports of Hankow (Tali Province) and Georgetown (Rajpur Province). Similar facilities are under construction in or near the larger cities in the grain producing areas of Lopez, Liberto, and Bolivar Provinces. These will be supplemented in the next few years with a dozen smaller storage warehouses equipped with drying and hulling facilities, particularly for rice, in lesser producing areas. The project is unable to progress as rapidly as desired because of the shortage of trained specialists to take charge of storage construction and administration. Extensive training programs for such personnel are planned in conjunction with the storage facilities programs. Data on quantities and kinds of surplus grains in the government's storage facilities are published quarterly. There is also a terminal refrigeration plant in each seaport to facilitate export of meat.

Improvement in Agrostan's highway systems is crucial to its agricultural progress. The Ministry of Interior has a long-range program over the next 10 years to provide highways suitable for trucks and farm-to-market roads suitable for other wheeled

vehicles. It is a two-part program with priority on improving the quality and maintenance of the existing highway system, according to traffic needs. Agrostan's main highways at present follow the Kandy River in the south and along the coastal plain in the west.

River navigation companies are being encouraged to increase the efficiency of their services through use of mechanized loading and unloading equipment. Companies are also being encouraged to adopt more efficient operating and labor practices so that their services will be made less expensive. Available data on river shipments have shown a decrease of approximately 7 percent annually for the last few years. To stem this decline, it is essential to provide differentiation in rates for various types of commodities shipped and different qualities of service.

The National Railway System operates the railroad which follows the Kandy River and is a major route for transporting agricultural products. There are no plans for immediate expansion of the railroad system as this project has the lowest priority in the program to improve transportation. However, the government is planning to expand the refrigerated car service by adding additional cars each year for the next several years.

6.28 Agricultural credit.--The Agricultural Credit Agency was established by the government in 1956 to assist farmers by furnishing long-term credit for the purchase of land and for financing major improvements. It also furnishes short- and intermediate-term credit for purchases of seed, fertilizer, and large equipment. Branch offices of the credit agency are located in each province to handle credit arrangements, mainly through cooperatives. In the Northern Territory, credit is arranged by the Governor's staff for Ministry Affairs. The credit agency not only gives great emphasis to making loans to agricultural cooperatives but to aiding them with advice on their financial problems and administration. Data are compiled annually on the number and value of long- and short-term loans. In 1967, the most recent year for which data are available, roughly 8,000 long-term loans, amounting to $5,000,000 were made. In the same year, about 80,000 short-term loans, amounting to $2,000,000 were made.

### *6.3 Rural community programs*

There has long been an overwhelming need throughout Agrostan, particularly in rural areas, for programs which would advance the economic and physical well-being of the people. In the past few years, in conjunction with the agricultural development programs, various ministries of the National Government have begun several far-reaching programs to improve the health, educational level, and standards of living of the people, giving special emphasis to helping rural communities. Progress to date has been hampered due to lack of resources to organize and carry out the projects. These programs are described below, along with any data available on the results of the programs.

6.31 Health.--The most important health need in rural areas is the control of environmental factors which affect health. To meet this need, the Public Health Service, of the Ministry of Health, Education, and Welfare, is giving primary emphasis to the construction and maintenance of sanitation facilities. This includes water purification, sewage, and waste disposal systems. In rural areas, the program calls for meeting sanitation needs by individual installations, such as a well, spring, stream, or cistern protected against pollution, and sanitary privies or septic tanks. At the time of the 1960 Census of Population and Housing, roughly 1 in 10 rural homes had running water and sanitary toilet facilities.

Many studies on the control of malaria have been made and others are in progress. Such measures as drainage, land-filling projects, and spraying have proven most effective. Records show that the prevalence of malaria has decreased to such an extent that the disease is no longer a major health threat.

Efforts are being made to prevent diseases transmitted by unprotected food and milk. For example, there already exists effective government inspection of meat for export, and a similar inspection system for meat for domestic consumption is being instituted. Refrigeration of shipments of meat and dairy products is fairly widespread but a requirement that milk be pasteurized has met with little success as yet. Measures are being considered for development of centralized milk pasteurization plants and distribution services.

One of the Public Health Service's most important functions is to actively promote a health education program to increase public awareness of health dangers, promote good habits of personal hygiene, and gain active public support for community health programs such as wide-scale vaccination and immunization programs. Public Health Agencies at all levels of government have responsibility for health education.

Because of the rapid population increase in Agrostan, estimated at 2.6 to 2.8 percent a year, the government has initiated a program of population control on a national scale. The first step, in 1962, was to incorporate a family planning program along with the maternal and child health programs which Public Health Clinics conducted to provide prenatal care, advice, and consultation to mothers. Through these clinics mothers were provided with information and devices at a small cost, for limitation and spacing of children, if families made this choice. Emphasis in the program is to have the decision to limit the family size made by the individual family for purely family reasons and not through any coercion. In 1965, the family planning program was expanded by establishing information centers throughout rural areas as well as in urban centers.

An extensive radio and newspaper publicity campaign has been carried on to publicize information about the purpose of the family planning centers and their locations. Visits to the centers to request information have been increasing each year since they were opened, at the rate of about 5 percent per year. Administrative records showed that the centers processed visits by approximately 120,000 women during 1967, the latest year for which figures are available.

6.32 Education.--As a matter of great economic importance to the nation, the government, through the Ministry of Health, Education, and Welfare, has taken measures to expand educational facilities and to improve both the quantity and quality of instruction. Emphasis for rural areas is being given first to primary education. Although the primary impact of the program is to reduce illiteracy, there will be some changes in curricula; such as providing health information on nutrition and prevention of disease, information on use of mechanical equipment, and more effective use of the soil. A compulsory attendance law has been passed for children of primary school age (5 to 14 years), but provision has been made for releasing children at harvest time. Other inducements offered to increase attendance are free meals and medical services for the children.

Many new school buildings are needed, and buildings adequate for rural schools will be built at reduced costs by using cheaper materials, adopting more efficient production methods, and taking advantage of savings resulting from large-scale production. The plan provides for expansion of primary school facilities at the rate of 1,000 to 1,500 rooms annually over a 5-year period, which began in 1966. Construction costs will be paid mainly by the National government but local governments will be expected to pay for part of the costs.

After the program for improving primary education is under way, the Ministry of Health, Education, and Welfare plans to take steps to gradually improve, enlarge, and expand agricultural technical schools and colleges. The objective will be to effectively reach all sections of the country with intensive teaching of modern agricultural methods to large segments of the agrarian population. The budget will be increased each year for several years to provide for the enlargement and expansion.

Eventually, new agricultural colleges may be needed but they are not of immediate concern.

6.33 Electrification.--Since the early 1950's, the National Government, through the Ministry of Interior, has been promoting electric power development on a national scale. Many power systems in rural areas are local in character and serve only a small number of hamlets or chiefdoms. Initial investment for establishing such systems, to expand distribution of electricity to rural users, requires sizeable financing. To meet this situation, the National Government has inaugurated a pattern of power enterprises, or "centrales," to permit economical distribution of power to more extensive regional networks. The "centrales" are of mixed ownership, usually shared by national, provincial, and district governments. In some cases, the "centrales" generate power and sell it to local utility companies; in other cases, they take over the distributing companies and their generating facilities.

According to the 1960 Census of Population and Housing for the Provinces, approximately 10 percent of rural homes had electricity. It is expected that data from the 1970 Population and Housing Census will reflect the impact of the "centrales" in rural areas by showing a considerable increase in the number of homes using electricity.

## 7. RELATED CENSUSES AND SURVEYS

In addition to the 1961 Sample Census of Agriculture and the current surveys and development programs, various other sources of data will be carefully studied in connection with the initial planning for an agricultural census. Of particular importance are the decennial censuses of population, the current household surveys, and records of imports and exports.

### *7.1 1950 Census of Population for the Provinces*

The first census of Agrostan was the 1950 Census of Population for the Provinces, which was important in establishing benchmark figures needed for measuring economic and social growth in the country. Basic information which was obtained about the population included age, sex, marital status, relationship to head of household, tribal affiliation, level of education, literacy, and economic activity status. No information was obtained on housing condition or facilities, other than type of water supply, and use of electricity.

### *7.2 1960 Census of Population and Housing for the Provinces*

Information obtained for the population in the 1960 Census included age, sex, marital status, relationship to the head of the household, literacy, school attendance, educational level, economic activity status of the population 12 years old and over, occupation and industry of economically active persons, and wages and salary income. Topics on housing characteristics included number of rooms, tenure, water supply, toilet facilities, electric lighting, and ownership of radio and television sets.

### *7.3 Household surveys*

In 1968, the NSO initiated a continuing household survey on "Manpower," designed to provide current data on employment and unemployment of the nation's working-age population. The NSO adopted a 5-year plan, starting with an annual survey for the first 3 years, biannual the fourth year, and quarterly the fifth year. The sample for each survey would comprise 8,000 sample households spread throughout the survey period and provide national estimates. From time to time supplemental inquiries on such subjects as health, education, housing, and family expenditures are planned.

### *7.4 Foreign trade reports*

Data are available quarterly and annually on the volume and quantity of exports and imports in reports issued by the Foreign Trade Division of the NSO. The information is extracted from customs declarations and other records of the Ministry of Commerce and Labor.

## 8. PRE-PLANNING THE 1970 AGRICULTURAL CENSUS

The National Statistical Council has recommended that a second census of agriculture be taken, as part of Agrostan's 1970 Census program, with the stipulation that planning by the NSO and the Ministry of Agriculture begin immediately. A 2- to 3-year planning and preparatory period, as a minimum, is required for such an undertaking.

### 8.1 *Formation of working group*

To begin the planning of the agricultural census for the 1970 census program, the Director of the NSO set up a "Working Group for the Census of Agriculture" and a similar group was set up for the Census of Population and Housing. Since the primary function of both working groups is to organize the planning, both groups will be dissolved once their programs are under way.

In forming the Working Group for the Census of Agriculture, the Director utilized the present staff of the NSO and representatives of the Ministry of Agriculture. Members of the Working Group include the Technical Adviser, the sampling statistician, and the Chiefs of the Agriculture and Field Operations Divisions. The Department of Services is represented by the Chiefs of the Geography, Machine Tabulation, and Publications Divisions so that all the activities associated with the census will be covered. Three members were selected from the Ministry of Agriculture--subject-matter specialists who represented the fields of agronomy, animal husbandry, and land management.

The Working Group decided that, in order to develop specific plans and procedures for the different aspects of an agricultural census, they would need to assemble certain basic information about Agrostan--its geography and physical characteristics, data on agriculture from the previous census and from other sources, as well as characteristics of the people and how they live. In addition, the Working Group will consider important administrative matters involved in planning and carrying out a census program, such as: budget estimates; prevailing wage and salary scales; availability of qualified personnel to work on the census; preparation of a time table for census activities; and other budget and personnel matters. The Working Group will need to make some initial decisions in both technical and administrative areas, to serve as planning guidelines.

### 8.2 *Assembling of basic information for Agrostan*

The task of assembling basic statistical information about Agrostan was assigned to a subcommittee under the direction of the Chief of the Agriculture Division. Such information includes all available agricultural data on Agrostan, plus data on characteristics of the population which would reflect level of living. The subcommittee was charged with assembling the latest available data from censuses, surveys, and administrative records.

This information was needed for several purposes--for guidance in deciding the content of the questionnaires, for determining priority of subjects to be investigated, and for evaluating the census results. For example, if the data indicated that very few peach trees were grown, a question on peach trees might well be given low priority.

The statistical data that were assembled by the Working Group are exhibited in chapter 2.

### 8.3 *Making initial decisions*

In setting up specific plans for conducting an agricultural census, the Working Group was faced with having to make a number of decisions. Since many of these decisions were interrelated, it soon became obvious to the members that they would have to make certain initial decisions before they could make any progress in planning the program. For example, they had to decide whether a complete or a sample census should be taken; whether it should be taken simultaneously with or following

the 1970 Census of Population and Housing; and how much money and resources would be available. If the decision favored a sample census, the sample design could not be planned without a guideline on how large the sample would be, and what degree of sampling variability would be acceptable. Questionnaires could not be designed until the content and scope of the census were determined; and field operations could not be planned until the type of census was decided on.

These initial decisions dealing with the timing, content, scope, and design of the agricultural census are discussed in Unit II.

## 9. *PLANNING THE AGRICULTURAL CENSUS PROGRAM*

The Working Group was aware that the effective implementation of the agricultural census program would require the preparation of certain plans and procedures by coordinated subcommittees. The main activities which the Working Group identified are described below. (Detailed procedures and materials for these activities are presented in subsequent units of the case study, as indicated.)

### *9.1 Budgeting and scheduling (Unit II)*

The activity involves the handling of administrative matters. These would include matters related to budgeting and scheduling of various census operations from the planning to the publication stage. Included also would be matters related to recruitment of office personnel, training, and supervision.

### *9.2 Formulation of concepts (Unit III)*

The concepts and categories of classification for the topics to be investigated would be established. Insofar as possible, the concepts proposed in the FAO Program for the 1970 World Census of Agriculture would be adopted. The subcommittee would take into account new developments in agriculture, and at the same time, strive to maintain continuity and comparability with the major concepts used in the 1961 Sample Census of Agriculture.

### *9.3 Preparation of questionnaires (Unit III)*

This activity involves the designing of questionnaires, listing forms, and other forms required for collection of the data. The plans would provide for small-scale pretests to detect troublesome spots in the wording of questions.

### *9.4 Preparation of table formats (Unit III)*

Items to be tabulated and the level of detail (by size of holding, crop area, tenure, land utilization, and the like) would be specified. Table formats provide for distributions and cross-tabulations to meet the objectives of the agricultural program of Agrostan. Where desirable, the detail in the tables will be consistent with the 1961 tabulations so that the results for the two censuses will be comparable. The preparation of table outlines early in the planning will assure that the required items are included in the questionnaires.

### *9.5 Enumeration plan and sample design (Unit IV)*

This activity involves developing the overall enumeration plan and designing the sample, assuming that there would be sampling at some stage of the census. Sample design involves selecting the sample areas, establishing a sampling frame, and determining the rate for selection of the sample holdings.

### *9.6 Preparation of maps (Unit II)*

The principal objective of this activity would be to provide maps which show the location and boundaries of the area which the enumerator is to cover. Other maps to be prepared include: (a) a master set for the use of the NSO staff; (b) large maps of each district showing the boundaries and location of the areas to be covered by the enumerators; (c) maps showing physical features, transportation systems, and population density to enable the field staff to plan assignments and estimate travel; and (d) administrative-area and analytical maps to include in census reports.

As a preliminary step to preparing maps, mapping resources and the availability of various types of maps would be investigated.

### *9.7 Data collection operations (Unit V)*

This activity is concerned primarily with collection of data in the field. Plans would be made for the organization and administration of a field staff. Procedures would be set up for recruiting, hiring, and training field supervisory staff and enumerators; for listing and enumerating holdings; for transmittal of completed questionnaires; and for preparation of instruction manuals and training materials. Separate procedures would be developed for the enumeration of holdings with large or specialized agricultural operations. In addition, this activity will provide for checking the quality of the enumerators' work and for a program to evaluate the accuracy of the information.

### *9.8 Distribution, receipt, and control of census materials (Unit VI)*

The procedures for this operation would relate to the distribution of materials (maps, training materials, questionnaires, and other forms) by the NSO to the Province and Territorial Census Offices, and then to supervisors and enumerators, and to the receipt and control of these materials at each point. Procedures must also be set up for the control of the materials through the various operations within the NSO. Instructions would also be prepared for examining the materials at appropriate control points to verify that all completed forms were received and that procedures were correctly followed.

### *9.9 Editing and coding (Unit VII)*

The objective of this operation would be to prepare the completed questionnaires for tabulation. The procedures to be set up would provide the rules for examining the questionnaires for completeness and consistency, supplying missing entries and correcting inconsistent ones, and assigning numerical codes. A procedure would also be included for returning certain kinds of deficient questionnaires to the field staff for remedial action.

### *9.10 Processing of the data (Unit VIII)*

Transforming the coded entries on the questionnaires into tabulated data would be the objective of this activity. Steps to describe this operation would include procedures for transcribing coded entries from the questionnaires to punch cards, and then tabulating the information in the cards. Procedures for interpreting the concepts reflected in the tables and analyzing the subject requirements also would be covered. A final procedure would be the method for inflating sample figures, if sampling or subsampling is used in the enumeration or tabulation.

### *9.11 Posting of tabulated data to table worksheets (Unit VIII)*

Procedures for this operation would involve instructions for decoding the tabulated data and posting the figures to appropriate worksheets or table formats. Included would be instructions for checking mechanical consistency between tables and for performing computations not made by the tabulating equipment.

### *9.12 Review and analysis of data (Unit IX)*

Review of the tabulated data would involve procedures for examining the data for reasonableness and consistency. Comparability with key figures from the 1961 Sample Census of Agriculture and independent estimates would be considered. If information is collected or tabulated on a sample basis, guidelines would be established for suppressing or collapsing certain cells on the basis of the standard error and the size of the estimate.

### *9.13 Publication of results (Unit IX)*

This activity relates to the publication of the census results in the form of a set of tables, a verbal summary of the results, a description of the concepts and procedures, and, if sampling was

used, an explanation of sampling variability. Procedures for this operation would include instructions for setting up the verbal and statistical portions of the reports for printing, and guidelines on what to include in the descriptive portions.

### *9.14 Extending and updating the census (Unit X)*

This activity would develop a plan for current surveys, generally using the census as a frame. The surveys would be of two types: (a) surveys which would obtain information on topics not suitable for a decennial census (for example, topics for which considerable detail is needed, such as detail on kinds, amount, and sale of products of the holding) and (b) surveys which update the census information (for example, a survey to provide yearly estimates of wheat production).

## *10. CHANGES IN THE NATIONAL STATISTICAL OFFICE*

Once the planning operations are identified, questions arise as to who should carry out the plans and what changes are required in the organization and functions of the NSO. To successfully carry out a major statistical operation such as the 1970 Census program, the Working Groups jointly agreed that special preparations by the NSO will be required, as well as some organizational changes.

Since the Population and Housing Division will have overall responsibility for the population and housing census and the Agriculture Division will have overall responsibility for the agricultural census, both of these divisions will require the assistance and cooperation of the several divisions in the NSO which provide specialized services. To assure this cooperation, the Working Groups will assign first priority in all cooperating divisions to the 1970 Census programs. The two subject divisions will have to expand considerably by addition of both professional and nonprofessional personnel. Even with additional staff, it is expected that personnel will have to be temporarily shifted from one division to another within the NSO at times, to meet peak workloads. In some cases, personnel with special skills will be borrowed from other Ministries and fitted into the NSO organization. For example, when the agricultural census is taken, the Ministry of Agriculture will make a number of agriculture specialists available to the Agriculture Division for the duration of the census.

Although the changes in the NSO organization and functions will primarily affect the Population and Housing Division and the Agriculture Division of the Department of Censuses and Surveys, the four divisions of the Department of Services, the Office of the Technical Adviser, the Administrative Office, and the Information Office will also be considerably affected. Other divisions of the NSO would be relatively unaffected by the 1970 Census program.

### *10.1 Changes in the Department of Censuses and Surveys*

The Working Groups decided that specialization of functions would be necessary in both the subject divisions in order to efficiently carry out their responsibilities for the two major censuses. Consequently, plans were made for creation of new sections with specialized functions in both the Population and Housing Division and the Agriculture Division. These changes are shown in the organization chart of the National Statistical Office (see exhibit I-3-2).

10.11 Population and Housing Division.--This Division normally consists of three sections--a Census Section, a Household Surveys Section, and a Vital Statistics Section. In preparation for the 1970 Population and Housing Census, the Census Section will be divided into the "Population Census Section" and the "Housing Census Section" to carry out the specialized subject matter responsibilities for each part of the census. In addition, a new "Operations Section" will be formed. The two subject matter sections will consist mainly of professional staff--demographers, statisticians, and subject matter specialists. The "Operations Section" will consist of a few

experienced procedural specialists and a large complement of clerks to perform editing and coding operations and posting to table worksheets.

10.12 Agriculture Division.--This Division normally consists of a few professionals--statisticians and subject matter specialists--and a few clerks, whose main responsibilities consist of developing current agricultural data from the Division's one continuing survey and from various administrative records and reports. For the agricultural census, the Division will expand and new specialized sections and subsections will be created.

A small group of personnel will be assigned to the "Agriculture Surveys Section" and will continue working on current agricultural statistics. Most of the experienced professional staff, the specialists loaned from the Ministry of Agriculture, and new personnel will be assigned to the "Agriculture Census Section" and will devote full time to the agricultural census.

The Agriculture Census Section will be further divided into two subsections--the "Program and Analysis Subsection" and the "Operations Subsection." The Program and Analysis Subsection will consist mainly of professional staff and will carry out subject matter responsibilities. The Operations Subsection will consist of a few procedural specialists and a large number of clerks who will carry out the editing and coding operations and posting to table worksheets.

### *10.2 Changes in the Department of Services*

Numerous changes will be made in all four divisions of the Department of Services, since all will have additional functions or additional workloads as a result of the 1970 Census program.

10.21 Geography Division.--The additional functions for this Division include the preparation of large-scale maps showing the boundaries of the enumeration areas for the 1970 Censuses, and small-scale maps for the supervisors. Some field work will be required in connection with the preparation of maps. To carry out this work, the Geography Division will expand its staff, but no reorganization of the division is anticipated.

10.22 Field Operations Division.--This Division is responsible for carrying out the field work for the 1970 Censuses. To handle its expanded activities and workload in the NSO headquarters for the major censuses, the Field Operations Division will undergo an extensive reorganization and will expand its staff considerably. Several new sections will be created to permit specialization of functions within the division. Also, a new position, "Assistant for Field Operations," will be established and filled by a person qualified to act as liaison with the subject matter divisions and to coordinate activities of the field staff with those of the NSO headquarters.

Four separate sections will be created to carry out the specialized responsibilities. The "Population and Housing Census Section" will handle only the field activities relating to the population and housing censuses; and the "Agriculture Census Section" will handle only the field activities relating to the census of agriculture. The "Current Programs Section" will be responsible only for the field activities for continuing surveys and other statistical programs not related to the 1970 Census program; and the "Administrative Section" will be responsible for all administrative matters (budget, payroll, personnel, and the like) relating to field operations for both the major censuses and the current survey programs.

In addition, the Field Operations Division will be responsible for establishing and directing temporary census offices in each of the 13 Provinces and one in the Northern Territory. These offices will recruit, train, and supervise the field personnel working on the 1970 Censuses in those areas. These offices will also serve as a communication link between the Field Operations Division at NSO headquarters and the field staff.

10.23 Machine Tabulation Division.--This Division will be heavily involved in the 1970 Census program. Tabulation plans must be prepared far in advance of the actual tabulating. The workload and staff of the Machine Tabulation Division will be so increased that it was decided to create three new sections to permit specialization

of functions. The "Population and Housing Census Section" will be concerned only with tabulation of data for the population and housing censuses; the "Agriculture Census Section" with the tabulation of data for the agricultural census; and the "Current Programs Section" with the tabulation of data for current surveys and programs of the NSO.

10.24 Publications Division.--This Division will need additional personnel to handle the increased workload of printing for the 1970 Censuses. This includes the printing of instructions, questionnaires, and other forms needed to conduct the censuses and the publication of the census results in the form of tables and reports. No reorganization of the Publications Division will be required, however.

### *10.3 Additional functions of the Office of Technical Adviser*

The workload of the staff in the Office of the Technical Adviser will increase considerably as a result of the 1970 Census Program. When the Working Groups, formed to plan the programs, are dissolved, the Technical Adviser will continue to be concerned with all aspects of the program, particularly with the evaluation of various census procedures and the results.

### *10.4 Additional functions of the Administrative Office*

This Office will be responsible for administering the NSO's overall budget for all phases of the 1970 Census program and for maintaining the necessary controls over expenditures, and personnel and payroll matters. In order to carry out the added responsibilities for the censuses, and also keep up with its normal workload, the Administrative Office will greatly increase its staff of budget and management specialists.

### *10.5 Additional functions of the Information Office*

Because cooperation of the public is essential to the success of the 1970 Census program, the Information Office will have responsibility for a large-scale program to publicize the censuses. Since this requires preparation of a program for communicating in all possible ways, so as to reach all segments of the population, there will be a sizeable increase in the staff.

The Information Office will utilize the temporary census offices for distribution of publicity materials and also enlist the cooperation of various Province and district government offices, agricultural agents, and other public and private organizations, in publicizing the censuses. Another important responsibility of the Information Office is the preparation of special materials to be used for the recruitment of field supervisors and enumerators for the censuses. Poster announcements are particularly needed for recruitment purposes in rural areas.

## SELECTED LIST OF REFERENCES


1. Bower, C. A. and Lunin, Jesse. Problems of Soil and Water. Farmer's World. Washington, D.C., U.S. Dept. of Agriculture, 1964.

2. Brooks, Emerson M. 1970 World Census of Agriculture. Washington, D.C., International Agricultural Development, U.S. Dept. of Agriculture, Jan. 1968.

3. Brown, Lester R. Man, Land, and Food. Washington, D.C., U.S. Dept. of Agriculture, 1963.

4. Brown, Lester R. Narrowing the Food Gap. Paper presented at the Massachusetts Institute of Technology Single-Cell Protein Conference, Oct. 9, 1967.

5. Clawson, Marion. Land Use Information. Resources for the Future. Washington, D.C., 1965.

6. Food and Agriculture Organization of the United Nations:
   (a) Program for the 1970 World Census of Agriculture. Rome, 1965.
   (b) Third World Food Survey. Freedom from Hunger Campaign Basic Study No. 11. Rome, 1963.
   (c) The Basic Freedom - Freedom From Hunger. Selection from speeches made by B. R. Sen, Director-General. Rome, 1963.
   (d) Indicative World Plan for Agricultural Development. Progress Report, Forty-Seventh Session. Rome, Oct. 17, 1966.
   (e) Indicative World Plan for Agricultural Development, Near East. (Provisional) Subregional Study No. 1, Vol. II. Rome, 1966.
   (f) Agricultural Commodities - Projections for 1975 and 1985. Vol. I. Rome, 1967.
   (g) FAO Review. Vol. I, No. 1. Rome, Jan.-Feb., 1968.

7. Freeman, Orville F. Malthus, Marx, and the North American Breadbasket. Foreign Affairs Quarterly. July, 1967.

8. Greenshields, Elco L. Water Has a Key Role. Farmer's World. Washington, D.C., U.S. Dept. of Agriculture, 1964.

9. Inter American Statistical Institute:
   (a) Resolutions of International Conferences and Organizations Relating to Current Agricultural Statistics. Washington, D.C., Pan American Union, 1964.
   (b) Inter American Program of Basic Statistics. (PIEB), 5031a, Sup. V, Summary of VIII Session, Committee on Improvement of National Statistics. Panama, Sept. 2-14, 1964.

10. McKibben, E. G. and Carleton, W. M. Engineering in Agriculture. Farmer's World. Washington, D.C., U.S. Dept. of Agriculture, 1964.

11. Paddock, William and Paul. Famine 1975! Little, Brown and Co. Boston, 1967.

12. Parsons, Kenneth; Penn, Raymond; and Raup, Phillip. Land Tenure, Proceedings of the International Conference on Land Tenure and Related Problems in World Agriculture. Madison, Wisconsin, 1951. University of Wisconsin Press, 1956.

13. Phillips, Ralph W. The Role of International Organizations in Improving Agricultural Production and Food Use. No. 39. Washington, D.C., International Agricultural Development, U.S. Dept. of Agriculture, Jan. 1968.

14. President's Science Advisory Committee. The World Food Problem: Report of the Panel on the World Food Supply. Vols. I & II. Washington, D.C., The White House, May, 1967.

15. Scofield, William H. Research on the Changing Structure in Agricultural Production and Marketing. Journal of Farm Economics, Vol. 48, No. 5. Dec. 1966.

16. Sen, B. R. Food, Population and Development. Statement to the United Nations Population Commission, New York. March 24, 1965.

17. Simpson, Glenn D. The User and Producer of Agricultural Statistics. Paper given at CENTO Symposium on Agricultural Statistics, Ankara, Turkey. Oct. 1967.

18. Statistical Reporting Service of the U.S. Dept. of Agriculture. Scope - Methods. Misc. Publication No. 967. Dec. 1964.

19. Taeuber, Conrad. Using a Census of Agriculture. International Institute Bulletin, Vol. 36, Part 4, 1957.

20. Taeuber, Conrad. Resources and Facilities for Providing Needed Statistics: The Role of the Bureau of the Census. Journal of Agricultural Economics, Vol. 48, No. 5. Dec. 1966.

21. U.S. Bureau of the Census. Atlantida, A Case Study in Household Sample Surveys, Unit I, Survey Objectives and Description of Country. Series ISPO 1, No. 1-B. Washington, D.C., 1965.

22. U.S. Department of Agriculture. Major Statistical Series - How They are Constructed and Used. Agricultural Handbook No. 118, 1957.

## APPENDIX

(Exhibits are arranged in numerical sequence; titles of the exhibits are listed in the table of contents. Because many figures in the exhibits have been rounded independently in different computations, there may be slight variations from one to another in specific figures and in sums of rounded figures)

*Exhibit I-2-1. ADMINISTRATIVE DIVISIONS AND MAJOR TRANSPORTATION SYSTEMS*

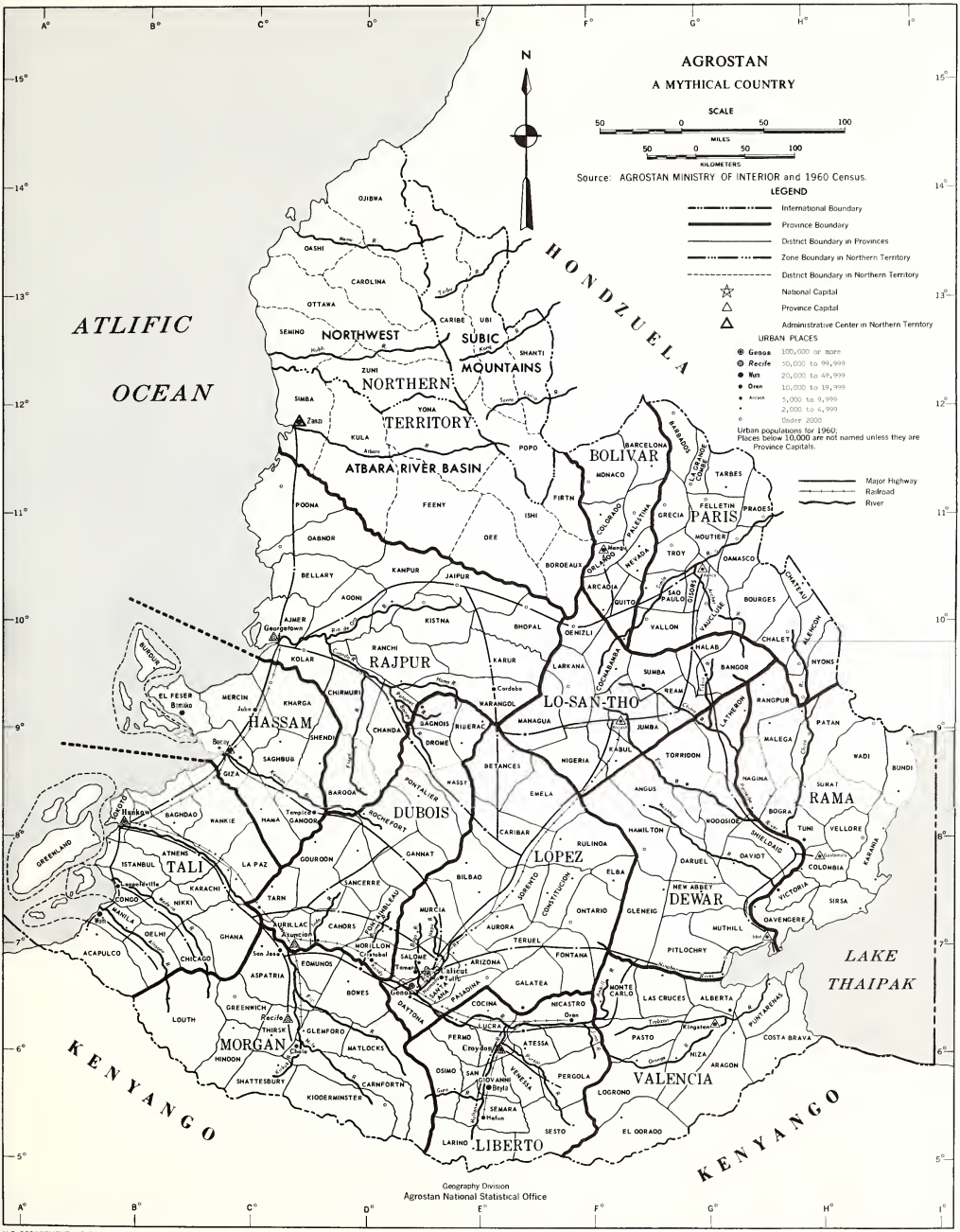


*Exhibit I-2-2. LANDFORMS AND DRAINAGE*

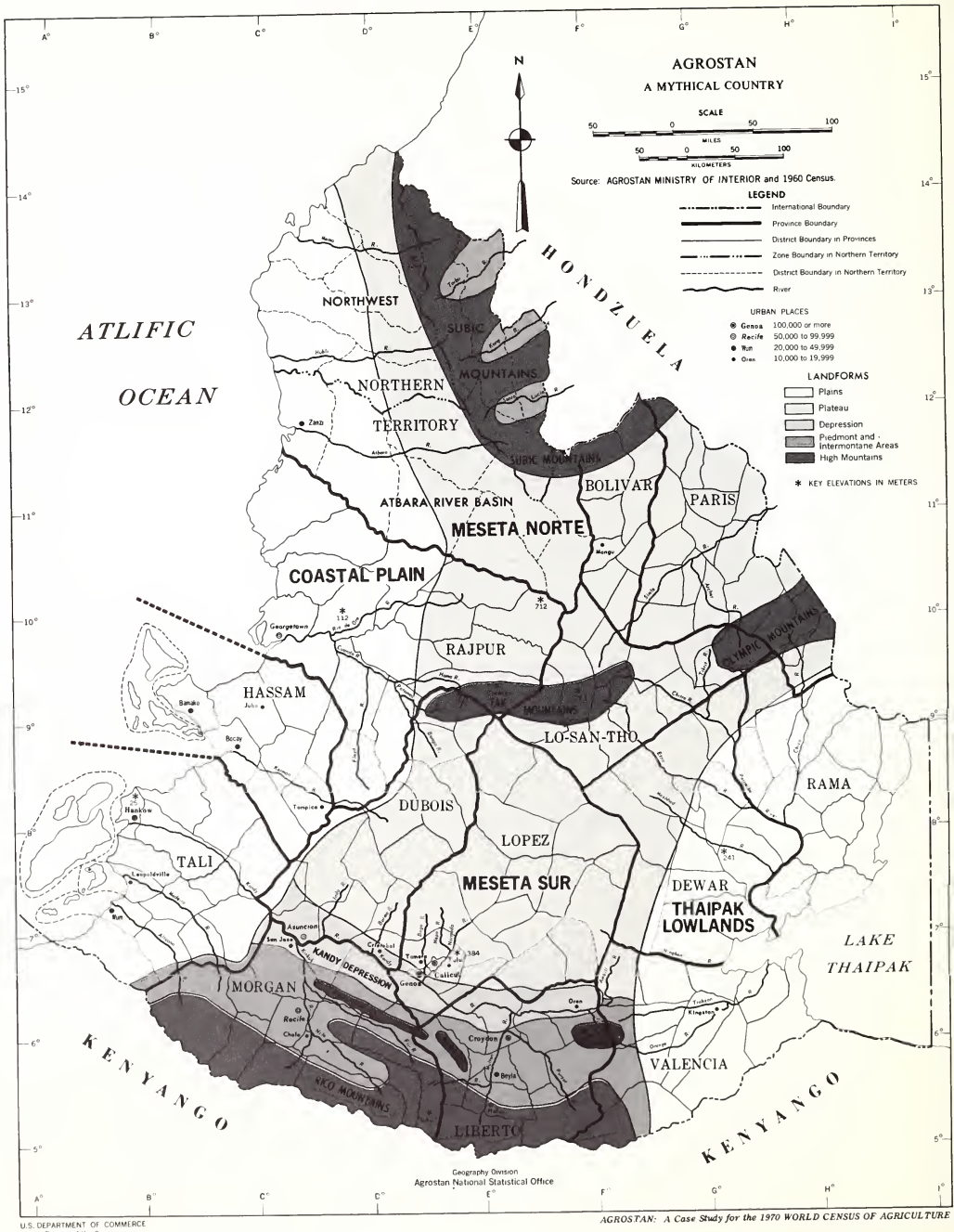


*Exhibit I-2-3. CLIMATE ZONES*

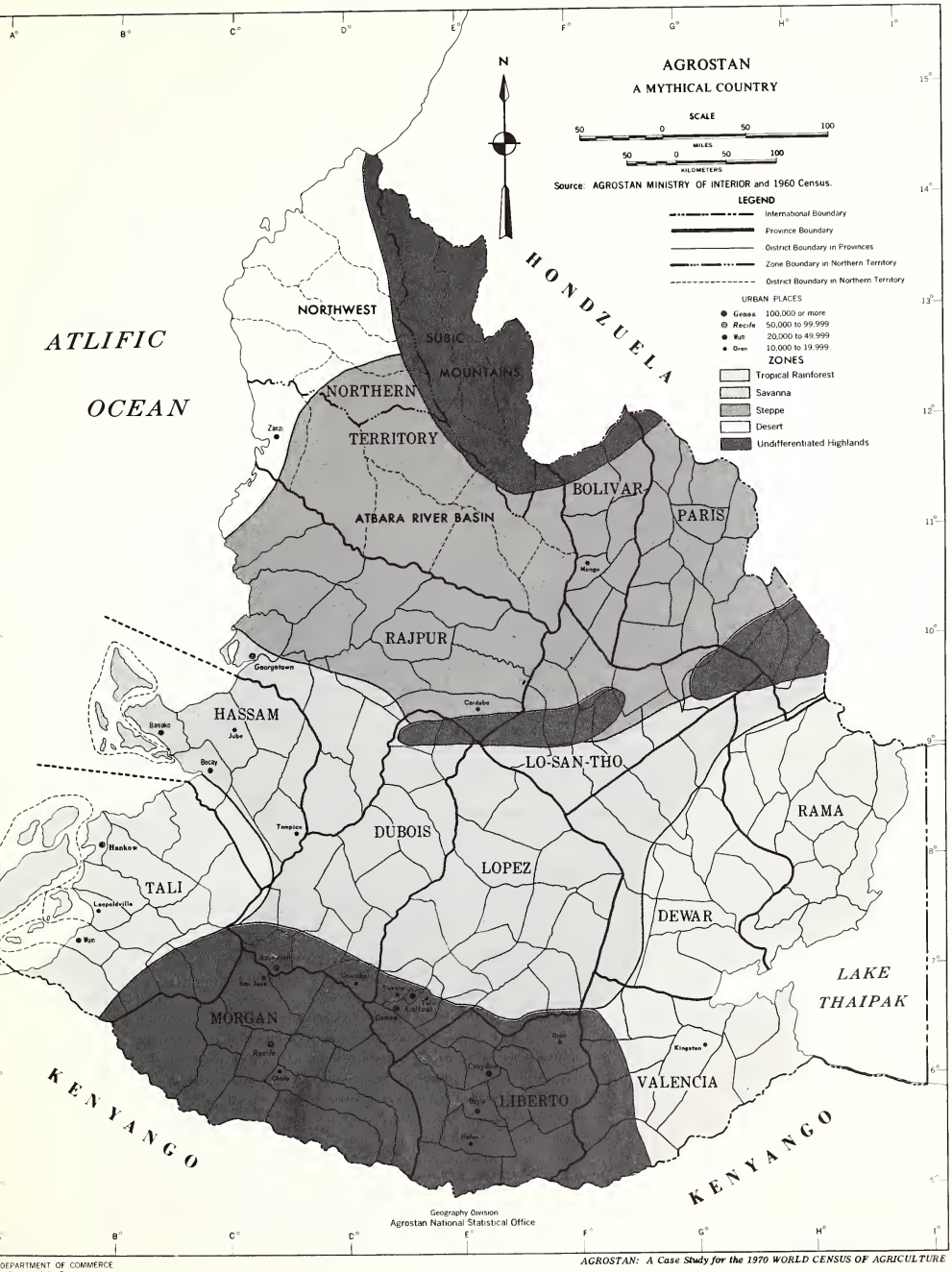


*Exhibit I-2-4. CLIMATE CHARTS OF SELECTED STATIONS, FOR THE PERIOD 1935-1965*

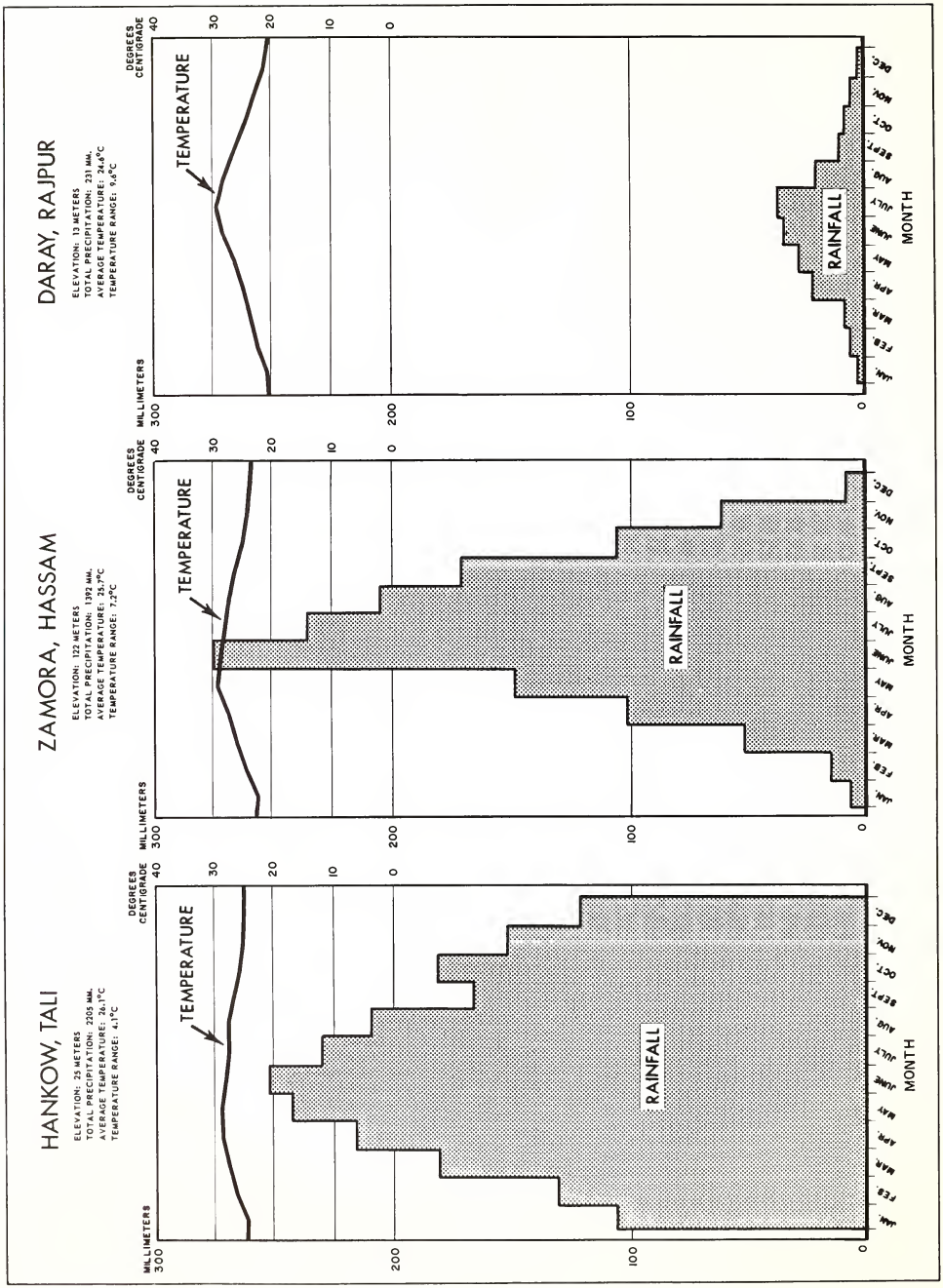
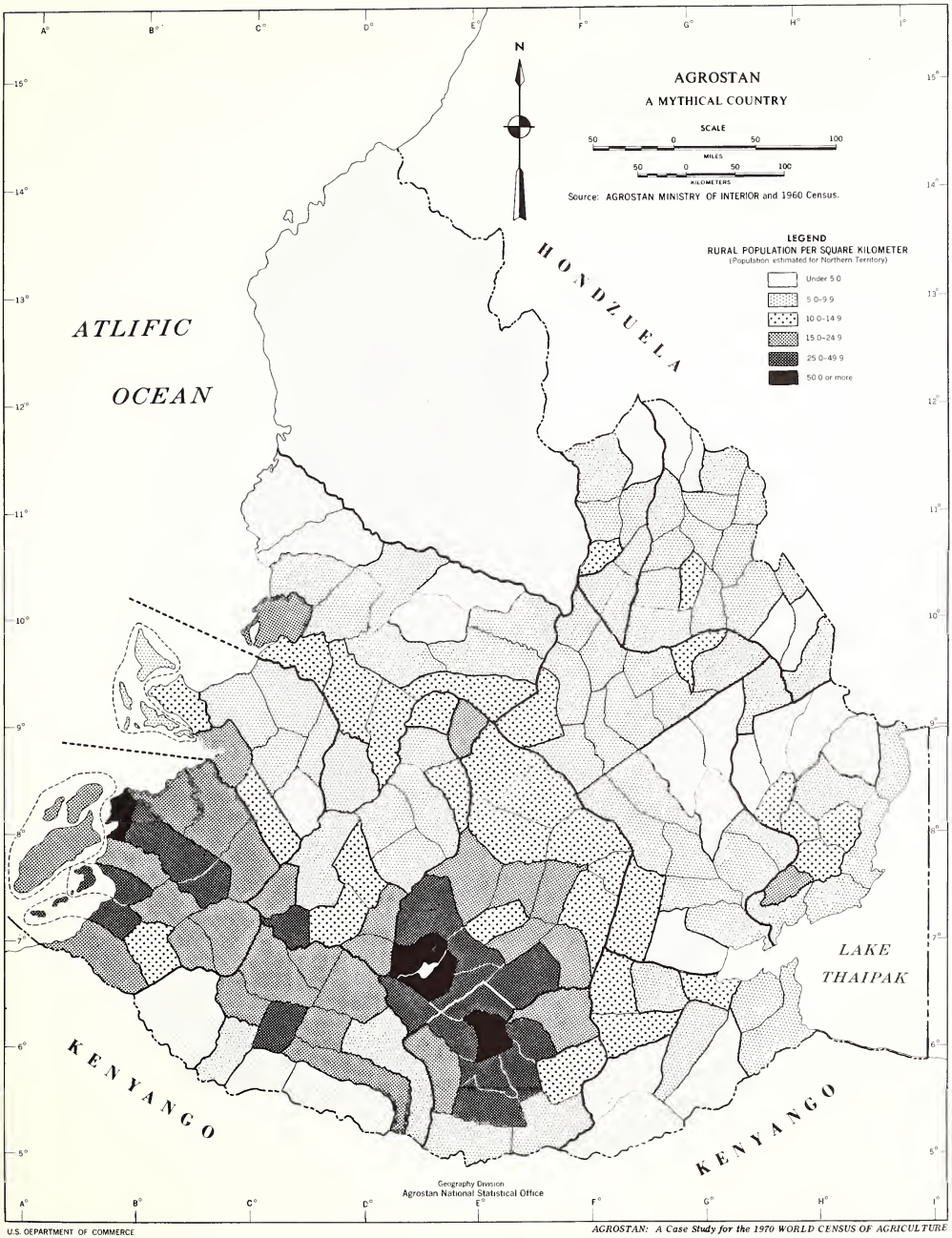
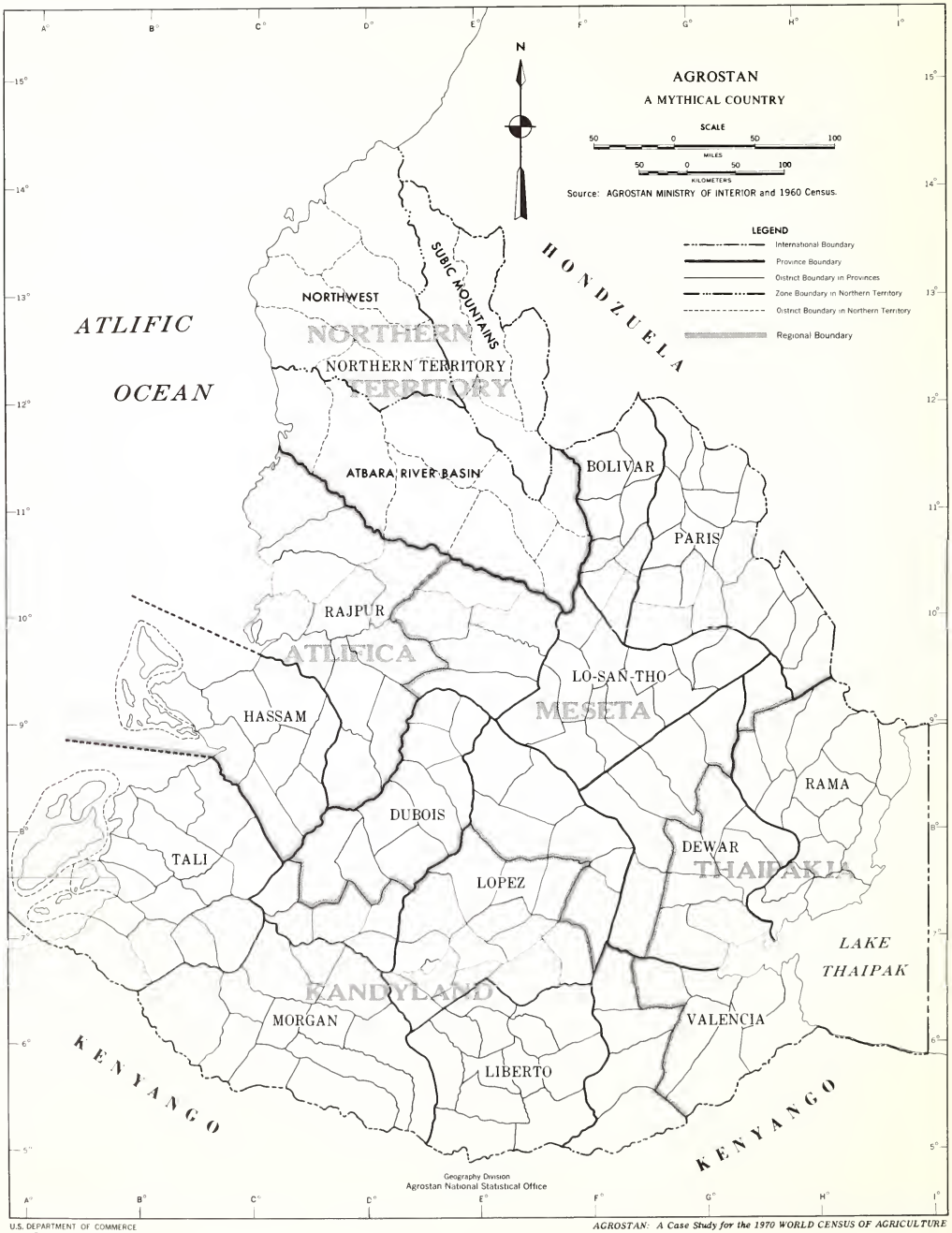


*Exhibit I-2-5. RURAL POPULATION DENSITY FOR DISTRICTS: 1960*




U.S. DEPARTMENT OF COMMERCE
Bureau of the Census

*Exhibit I-2-6. GEOGRAPHIC REGIONS*




U.S. DEPARTMENT OF COMMERCE
Bureau of the Census

*AGROSTAN: A Case Study for the 1970 WORLD CENSUS OF AGRICULTURE*

*Exhibit I-2-7. ADMINISTRATIVE DIVISIONS BY ORDER OF SIZE, FOR THE PROVINCES AND THE NORTHERN TERRITORY*

| Order of size | Provinces | | Northern Territory | |
|---|---|---|---|---|
| | Division | Number | Division | Number |
| Major | Provinces | 13 | Zones | 3 |
| Intermediate | Districts | 172 | Districts | 18 |
| Minor | Subdistricts | 975 | Chiefdoms | 1,879 |
| Subdivision of minor | Enumeration areas (EA's)[1] | 14,442 | | |

[1]Delineated for the 1960 Census of Population for the Provinces.

*Exhibit I-2-8. NUMBER OF DISTRICTS AND CHIEFDOMS, AND NAME OF MAJOR CITY, FOR THE NORTHERN TERRITORY*

| Zone[1] | Territorial districts | Chiefdoms | Major city |
|---|---|---|---|
| Northern Territory.. | 18 | 1,879 | Zanzi |
| Atbara River Basin..... | 8 | 776 | Zanzi |
| Northwest..... | 6 | 659 | Cebu |
| Subic Mountains..... | 4 | 444 | Ombo |

[1]Delineated for development planning.

*Exhibit I-2-9. NUMBER OF DISTRICTS, SUBDISTRICTS, AND ENUMERATION AREAS, AND NAME OF CAPITAL CITY, FOR THE PROVINCES*

| Province | Districts | Subdistricts | Enumeration areas | | | Capital city |
|---|---|---|---|---|---|---|
| | | | Total | Urban | Rural | |
| Total..... | 172 | 975 | 14,442 | 3,698 | 10,744 | Calicut |
| Bolivar..... | 8 | 25 | 292 | 82 | 210 | Mongu |
| Dewar..... | 12 | 50 | 588 | 113 | 475 | Irbid |
| DuBois..... | 14 | 70 | 1,116 | 336 | 780 | Asuncion |
| Hassam..... | 9 | 42 | 648 | 238 | 410 | Bocay |
| Liberto..... | 12 | 110 | 1,772 | 401 | 1,371 | Croydon |
| Lopez..... | 20 | 211 | 2,957 | 1,041 | 1,916 | Calicut[1] |
| Lo-San-Tho..... | 11 | 49 | 678 | 144 | 534 | Ancash |
| Morgan..... | 12 | 80 | 1,226 | 266 | 960 | Recife |
| Paris..... | 18 | 45 | 652 | 71 | 581 | Renca |
| Rajpur..... | 16 | 70 | 1,028 | 196 | 832 | Georgetown |
| Rama..... | 15 | 45 | 675 | 165 | 510 | Guatemala |
| Tali..... | 15 | 138 | 2,124 | 515 | 1,609 | Hankow |
| Valencia..... | 10 | 40 | 686 | 130 | 556 | Kingston |

[1]Capital of Lopez Province and capital of Agrostan.

*Exhibit I-2-10. AREA, POPULATION, AND POPULATION DENSITY, URBAN AND RURAL: 1960*

| Province or zone | Area (square kilometers) | | Population | | | | | | Density (population per km²) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number | | | Percent | | | | |
| | Number | Percent | Total | Urban | Rural | Total | Urban | Rural | Total | Rural |
| Total | 518,761 | 100.0 | 7,387,224 | 1,875,734 | 5,511,490 | 100.0 | 100.0 | 100.0 | 14.2 | 10.6 |
| Provinces | 424,022 | 81.7 | 7,087,224 | 1,848,434 | 5,238,790 | 95.9 | 98.5 | 95.1 | 16.7 | 12.4 |
| Northern Territory* | 94,739 | 18.3 | 300,000 | 27,300 | 272,700 | 4.1 | 1.5 | 4.9 | 3.2 | 2.9 |
| Provinces | 424,022 | 100.0 | 7,087,224 | 1,848,434 | 5,238,790 | 100.0 | 100.0 | 100.0 | 16.7 | 12.4 |
| Bolivar | 13,503 | 3.2 | 128,293 | 33,430 | 94,863 | 1.8 | 1.8 | 1.8 | 9.5 | 7.0 |
| Dewar | 36,002 | 8.5 | 267,084 | 48,343 | 218,741 | 3.8 | 2.6 | 4.2 | 7.4 | 6.1 |
| DuBois | 30,043 | 7.1 | 549,297 | 162,369 | 386,928 | 7.7 | 8.8 | 7.4 | 18.3 | 12.9 |
| Hassam | 21,378 | 5.0 | 318,345 | 113,680 | 204,665 | 4.5 | 6.1 | 3.9 | 14.9 | 9.6 |
| Liberto | 26,591 | 6.3 | 860,526 | 200,113 | 660,413 | 12.1 | 10.8 | 12.6 | 32.4 | 24.8 |
| Lopez | 46,234 | 10.9 | 1,706,608 | 626,591 | 1,080,017 | 24.1 | 33.9 | 20.6 | 36.9 | 23.4 |
| Lo-San-Tho | 25,420 | 6.0 | 256,112 | 47,027 | 209,085 | 3.6 | 2.5 | 4.0 | 10.1 | 8.2 |
| Morgan | 37,667 | 8.9 | 599,554 | 124,198 | 475,356 | 8.4 | 6.7 | 9.1 | 15.9 | 12.6 |
| Paris | 31,731 | 7.5 | 259,642 | 25,014 | 234,628 | 3.7 | 1.4 | 4.5 | 8.2 | 7.4 |
| Rajpur | 56,383 | 13.3 | 500,880 | 91,788 | 409,092 | 7.1 | 5.0 | 7.8 | 8.9 | 7.3 |
| Rama | 31,507 | 7.4 | 304,698 | 68,162 | 236,536 | 4.3 | 3.7 | 4.5 | 9.7 | 7.5 |
| Tali | 36,324 | 8.6 | 1,081,932 | 259,714 | 822,218 | 15.3 | 14.1 | 15.7 | 29.8 | 22.6 |
| Valencia | 31,239 | 7.4 | 254,253 | 48,005 | 206,248 | 3.6 | 2.6 | 3.9 | 8.1 | 6.6 |
| Northern Territory* | 94,739 | 100.0 | 300,000 | 27,300 | 272,700 | 100.0 | 100.0 | 100.0 | 3.2 | 2.9 |
| Atbara River Basin | 38,552 | 40.7 | 130,000 | 23,500 | 106,500 | 43.3 | 86.0 | 39.1 | 3.4 | 2.8 |
| Northwest | 33,261 | 35.1 | 95,000 | 2,700 | 92,300 | 31.7 | 10.0 | 33.8 | 2.9 | 2.8 |
| Subic Mountains | 22,926 | 24.2 | 75,000 | 1,100 | 73,900 | 25.0 | 4.0 | 27.1 | 3.3 | 3.2 |

*Estimated.

Source: 1960 Census of Population for the Provinces; estimates by district officials for the Northern Territory.

*Exhibit I-2-11. URBAN AND RURAL POPULATION: 1960 AND 1950*

| Residence | Population, 1960 | | Population, 1950 | | Increase, 1950 to 1960 | |
|---|---|---|---|---|---|---|
| | Number (000) | Percent | Number (000) | Percent | Number (000) | Percent |
| Total | 7,387 | 100.0 | 5,707 | 100.0 | 1,680 | 29.4 |
| Urban | 1,876 | 25.4 | 1,324 | 23.2 | 552 | 41.7 |
| Rural | 5,511 | 74.6 | 4,383 | 76.8 | 1,128 | 25.7 |
| Provinces | 7,087 | 95.9 | 5,507 | 96.5 | 1,580 | 28.7 |
| Urban | 1,848 | 25.0 | 1,304 | 22.9 | 544 | 41.7 |
| Rural | 5,239 | 70.9 | 4,203 | 73.6 | 1,036 | 24.6 |
| Northern Territory* | 300 | 4.1 | 200 | 3.5 | 100 | 50.0 |
| Urban | 27 | 0.4 | 20 | 0.3 | 7 | 36.5 |
| Rural | 273 | 3.7 | 180 | 3.2 | 93 | 51.1 |

*Estimated.

Source: 1960 and 1950 Censuses of Population for the Provinces; estimates by district officials for the Northern Territory.

*Exhibit 1-2-12. URBAN AND RURAL POPULATION BY PROVINCES: 1960 AND 1950*

| Province | Population, 1960 | | | Population, 1950 | | | Increase, 1950 to 1960 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Number | | | Percent | | |
| | Total (000) | Urban (000) | Rural (000) | Total (000) | Urban (000) | Rural (000) | Total (000) | Urban (000) | Rural (000) | Total | Urban | Rural |
| Total | 7,087 | 1,848 | 5,239 | 5,507 | 1,304 | 4,203 | 1,580 | 544 | 1,036 | 28.7 | 41.7 | 24.6 |
| Bolivar | 128 | 33 | 95 | 110 | 28 | 82 | 18 | 5 | 13 | 16.4 | 17.8 | 15.8 |
| Dewar | 267 | 48 | 219 | 207 | 41 | 166 | 60 | 7 | 53 | 29.0 | 17.1 | 31.9 |
| DuBois | 549 | 162 | 387 | 422 | 126 | 296 | 127 | 36 | 91 | 30.1 | 28.6 | 30.7 |
| Hassam | 318 | 114 | 205 | 244 | 88 | 157 | 74 | 26 | 48 | 30.3 | 29.5 | 30.6 |
| Liberto | 861 | 200 | 660 | 712 | 124 | 588 | 149 | 76 | 73 | 20.9 | 61.3 | 12.4 |
| Lopez | 1,707 | 627 | 1,080 | 1,276 | 410 | 866 | 431 | 217 | 214 | 33.8 | 52.9 | 24.7 |
| Lo-San-Tho | 256 | 47 | 209 | 198 | 35 | 163 | 58 | 12 | 46 | 29.3 | 34.3 | 28.2 |
| Morgan | 600 | 124 | 475 | 488 | 82 | 406 | 111 | 42 | 69 | 22.7 | 51.2 | 17.0 |
| Paris | 260 | 25 | 235 | 223 | 14 | 209 | 37 | 11 | 26 | 16.6 | 78.6 | 12.4 |
| Rajpur | 501 | 92 | 409 | 376 | 61 | 315 | 125 | 31 | 94 | 33.2 | 50.8 | 29.8 |
| Rama | 305 | 68 | 237 | 236 | 55 | 180 | 69 | 13 | 56 | 29.3 | 23.6 | 31.1 |
| Tali | 1,082 | 260 | 822 | 819 | 203 | 616 | 263 | 57 | 206 | 32.1 | 28.1 | 33.4 |
| Valencia | 254 | 48 | 206 | 196 | 37 | 159 | 58 | 11 | 47 | 29.6 | 29.7 | 29.5 |

Source: 1960 and 1950 Censuses of Population for the Provinces.

*Exhibit 1-2-13. NUMBER AND POPULATION OF URBAN PLACES, BY POPULATION SIZE GROUPS: 1960*

(Excludes urban places in Northern Territory)

| Size group | Number of places | Urban population | |
|---|---|---|---|
| | | Number (000) | Percent |
| Total | 221 | 1,848 | 100.0 |
| Places with urban population— | | | |
| Under 2,000 | 36 | 33 | 1.8 |
| 2,000 to 4,999 | 132 | 390 | 21.1 |
| 5,000 to 9,999 | 29 | 179 | 9.7 |
| 10,000 to 19,999 | 13 | 160 | 8.6 |
| 20,000 to 49,999 | 4 | 125 | 6.8 |
| 50,000 to 99,999 | 3 | 192 | 10.4 |
| 100,000 to 299,999 | 3 | 394 | 21.3 |
| 300,000 or more | 1 | 375 | 20.3 |

Source: 1960 Census of Population for the Provinces.

*Exhibit I-2-14. NUMBER OF DISTRICTS BY AREA SIZE GROUPS: 1960*
(Excludes Northern Territory)

| Area (square kilometers) | Number of districts | Percent |
|---|---|---|
| Total | 172 | 100.0 |
| Under 1,000 | 5 | 2.9 |
| 1,000 to 1,499 | 27 | 15.7 |
| 1,500 to 1,999 | 36 | 20.9 |
| 2,000 to 2,499 | 29 | 16.9 |
| 2,500 to 2,999 | 19 | 11.0 |
| 3,000 to 3,499 | 19 | 11.0 |
| 3,500 to 3,999 | 29 | 16.9 |
| 4,000 or more | 8 | 4.7 |

Source: 1960 Census of Population for the Provinces.

*Exhibit I-2-15. NUMBER OF DISTRICTS BY RURAL POPULATION DENSITY GROUPS: 1960*
(Excludes Northern Territory)

| Rural population per km² | Number of districts | Percent |
|---|---|---|
| Total | 172 | 100.0 |
| Under 5.0 | 25 | 14.5 |
| 5.0 to 9.9 | 66 | 38.4 |
| 10.0 to 14.9 | 31 | 18.0 |
| 15.0 to 24.9 | 29 | 16.9 |
| 25.0 to 49.9 | 17 | 9.9 |
| 50.0 to 99.9 | 2 | 1.2 |
| 100.0 or more | 2 | 1.2 |

Source: 1960 Census of Population for the Provinces.

*Exhibit I-2-16. NUMBER AND RURAL POPULATION OF DISTRICTS, BY POPULATION SIZE GROUPS: 1960*
(Excludes Northern Territory)

| Size group | Number of districts | Rural population | |
|---|---|---|---|
| | | Number (000) | Percent |
| Total | 172 | 5,239 | 100.0 |
| Districts with rural population— | | | |
| Under 5,000 | 2 | 4 | 0.1 |
| 5,000 to 9,999 | 17 | 140 | 2.7 |
| 10,000 to 19,999 | 56 | 822 | 15.7 |
| 20,000 to 29,999 | 31 | 745 | 14.2 |
| 30,000 to 39,999 | 26 | 906 | 17.3 |
| 40,000 to 49,999 | 14 | 620 | 11.8 |
| 50,000 to 99,999 | 22 | 1,471 | 28.1 |
| 100,000 or more | 4 | 530 | 10.1 |

Source: 1960 Census of Population for the Provinces.

***Exhibit I-2-17. MAP LOCATION, AREA, URBAN AND RURAL POPULATION, AND RURAL POPULATION DENSITY, FOR DISTRICTS: 1960***

| Map location | District (zone) | Area (in km²) | Population, 1960 | | | Rural density |
|---|---|---|---|---|---|---|
| | | | Total | Urban | Rural | |
| | BOLIVAR | | | | | |
| F-10 | Arcadia | 1,369 | 12,215 | 3,104 | 9,111 | 6.7 |
| G-12 | Barcelona | 2,828 | 17,077 | 4,173 | 12,904 | 4.6 |
| F-11 | Colorado | 1,420 | 9,819 | 2,315 | 7,504 | 5.3 |
| F-12 | Monaco | 3,217 | 23,391 | 843 | 22,548 | 7.0 |
| G-11 | Nevada | 1,068 | 15,943 | 5,740 | 10,203 | 9.6 |
| F-11 | Orlando | 898 | 25,390 | 13,765 | 11,625 | 12.9 |
| G-11 | Palestina | 1,601 | 14,271 | 943 | 13,328 | 8.3 |
| F-10 | Quito | 1,102 | 10,187 | 2,547 | 7,640 | 6.9 |
| | DEWAR | | | | | |
| G-9 | Angus | 3,310 | 21,421 | 4,871 | 16,550 | 5.0 |
| G-8 | Daruel | 2,027 | 14,356 | 4,096 | 10,260 | 5.1 |
| H-8 | Daviot | 3,009 | 20,449 | 4,964 | 15,485 | 5.1 |
| G-8 | Glenelg | 3,842 | 48,884 | 2,260 | 46,624 | 12.1 |
| F-8 | Hamilton | 3,924 | 35,154 | 1,150 | 34,004 | 8.7 |
| G-9 | Latheron | 3,135 | 15,506 | 3,498 | 12,008 | 3.8 |
| G-7 | Muthill | 2,761 | 25,339 | 9,597 | 15,742 | 5.7 |
| G-8 | New Abbey | 2,157 | 17,999 | 2,361 | 15,638 | 7.2 |
| G-7 | Pitlochry | 3,596 | 17,644 | 1,135 | 16,509 | 4.6 |
| H-8 | Shieldaig | 1,884 | 14,357 | 3,960 | 10,397 | 5.5 |
| G-9 | Torridon | 3,840 | 23,079 | 5,071 | 18,008 | 4.7 |
| G-8 | Woodside | 2,517 | 12,896 | 5,380 | 7,516 | 3.0 |
| | DUBOIS | | | | | |
| C-7 | Aurillac | 1,316 | 139,000 | 82,256 | 56,744 | 43.1 |
| E-9 | Bagnois | 1,551 | 24,142 | 5,290 | 18,852 | 12.2 |
| D-7 | Cahors | 2,419 | 45,654 | 10,044 | 35,610 | 14.7 |
| E-9 | Drome | 1,872 | 21,225 | 8,444 | 12,781 | 6.8 |
| D-7 | Fontainbleau | 1,480 | 36,908 | 6,118 | 30,790 | 20.8 |
| E-8 | Gannat | 2,720 | 24,306 | 2,807 | 21,499 | 7.9 |
| D-8 | Gourdon | 4,187 | 38,196 | 2,344 | 35,852 | 8.6 |
| D-7 | Morillon | 1,453 | 51,723 | 19,763 | 31,960 | 22.0 |
| E-8 | Pontalier | 3,234 | 23,098 | 2,327 | 20,771 | 6.4 |
| E-9 | Riberac | 1,508 | 31,363 | 6,557 | 24,806 | 16.4 |
| D-8 | Rochefort | 2,689 | 24,720 | 2,468 | 22,252 | 8.3 |
| D-8 | Sancerre | 2,294 | 28,973 | 2,104 | 26,869 | 11.7 |
| C-8 | Tarn | 1,590 | 33,846 | 8,705 | 25,141 | 15.8 |
| E-9 | Wassy | 1,730 | 26,143 | 3,142 | 23,001 | 13.3 |
| | HASSAM | | | | | |
| B-10 | Burdur | 1,668 | 13,902 | 2,783 | 11,119 | 6.7 |
| C-9 | El Feser | 1,834 | 53,850 | 30,943 | 22,907 | 12.5 |
| D-8 | Gandor | 2,283 | 24,008 | 14,427 | 9,581 | 4.2 |
| C-9 | Giza | 2,184 | 88,491 | 45,627 | 42,864 | 19.6 |
| C-8 | Hama | 2,579 | 37,044 | 2,165 | 34,879 | 13.5 |
| C-9 | Kharga | 3,515 | 33,252 | 1,268 | 31,984 | 9.1 |
| C-9 | Mersin | 3,542 | 37,292 | 10,527 | 26,765 | 7.6 |
| C-9 | Saghbub | 2,283 | 14,924 | 3,603 | 11,321 | 5.0 |
| D-9 | Shendi | 1,490 | 15,582 | 2,337 | 13,245 | 8.9 |
| | LIBERTO | | | | | |
| F-6 | Atessa | 1,334 | 65,434 | 8,220 | 57,214 | 42.9 |
| E-7 | Cocina | 1,501 | 61,713 | 6,344 | 55,369 | 36.9 |
| E-6 | Fermo | 1,509 | 69,532 | 2,962 | 66,570 | 44.1 |
| E-5 | Larino | 2,848 | 24,386 | 3,540 | 20,846 | 7.3 |
| E-6 | Lucra | 1,477 | 194,200 | 100,207 | 93,993 | 63.6 |
| F-7 | Micastro | 3,440 | 72,612 | 10,357 | 62,255 | 18.1 |
| E-6 | Osimo | 2,756 | 69,481 | 3,078 | 66,403 | 24.1 |
| F-6 | Pergola | 2,895 | 43,953 | 2,700 | 41,253 | 14.2 |
| E-6 | San Giovanni | 1,442 | 106,119 | 45,138 | 60,981 | 42.3 |
| | LIBERTO—Con. | | | | | |
| E-6 | Semara | 2,398 | 85,889 | 12,184 | 73,705 | 30.7 |
| F-5 | Sesto | 3,501 | 21,856 | 3,158 | 18,698 | 5.3 |
| F-6 | Venessa | 1,490 | 45,351 | 2,225 | 43,126 | 28.9 |
| | LOPEZ | | | | | |
| E-7 | Arizona | 1,490 | 62,823 | 7,469 | 55,354 | 37.2 |
| E-7 | Aurora | 1,620 | 29,812 | 6,603 | 23,209 | 14.3 |
| E-9 | Betances | 3,677 | 43,728 | 5,672 | 38,056 | 10.3 |
| E-8 | Bilbao | 3,686 | 63,097 | 4,395 | 58,702 | 15.9 |
| E-7 | Calicut | 159 | 375,183 | 375,183 | (X) | (X) |
| E-8 | Caribar | 3,720 | 46,942 | 6,206 | 40,736 | 11.0 |
| F-8 | Constitucion | 2,019 | 42,219 | 6,555 | 35,664 | 17.7 |
| E-7 | Daytona | 1,626 | 50,382 | 8,608 | 41,774 | 25.7 |
| F-8 | Elba | 1,060 | 19,517 | 4,581 | 14,936 | 14.1 |
| F-8 | Emela | 3,537 | 39,515 | 1,326 | 38,189 | 10.8 |
| F-7 | Fontana | 2,418 | 40,701 | 2,567 | 38,134 | 15.8 |
| E-7 | Galatea | 3,076 | 99,384 | 5,824 | 93,560 | 30.4 |
| E-7 | Murcia | 3,574 | 96,428 | 7,071 | 89,357 | 25.0 |
| F-7 | Ontario | 3,243 | 46,582 | 1,544 | 45,038 | 13.9 |
| E-7 | Pasadina | 1,237 | 56,075 | 5,379 | 50,696 | 41.0 |
| F-8 | Rulinda | 3,622 | 40,693 | 2,161 | 38,532 | 10.6 |
| E-7 | Salome | 1,665 | 163,419 | 24,845 | 138,574 | 83.2 |
| E-7 | Santa Ana | 1,355 | 326,712 | 144,469 | 182,243 | 134.5 |
| F-8 | Sorento | 1,938 | 31,808 | 2,576 | 29,232 | 15.1 |
| F-7 | Teruel | 1,512 | 31,588 | 3,557 | 28,031 | 18.5 |
| | LO-SAN-THO | | | | | |
| G-10 | Bangor | 2,970 | 24,015 | 5,312 | 18,703 | 6.3 |
| F-10 | Cochabamba | 2,084 | 18,607 | 3,290 | 15,317 | 7.4 |
| F-10 | Denizli | 1,688 | 11,705 | 625 | 11,080 | 6.6 |
| G-10 | Halab | 1,276 | 19,649 | 6,138 | 13,511 | 10.6 |
| G-9 | Jumba | 2,861 | 33,529 | 8,231 | 25,298 | 8.8 |
| F-9 | Kabul | 2,108 | 20,089 | 4,578 | 15,511 | 7.4 |
| F-10 | Larkana | 2,701 | 21,639 | 418 | 21,221 | 7.9 |
| F-9 | Managua | 3,301 | 42,454 | 7,034 | 35,420 | 10.7 |
| F-9 | Nigeria | 2,793 | 24,451 | 2,230 | 22,221 | 8.0 |
| G-10 | Ream | 1,785 | 18,307 | 4,007 | 14,300 | 8.0 |
| G-10 | Sumba | 1,853 | 21,667 | 5,164 | 16,503 | 8.9 |
| | MORGAN | | | | | |
| C-7 | Aspatria | 3,785 | 93,120 | 12,776 | 80,344 | 21.2 |
| D-7 | Bowes | 3,291 | 83,685 | 6,427 | 77,258 | 23.5 |
| D-6 | Carnforth | 3,665 | 75,609 | 12,312 | 63,297 | 17.3 |
| D-7 | Edmunds | 1,592 | 43,722 | 8,143 | 35,579 | 22.3 |
| D-6 | Glemford | 1,280 | 29,192 | 3,645 | 25,547 | 20.0 |
| C-7 | Greenwich | 1,813 | 40,376 | 1,360 | 39,016 | 21.5 |
| C-6 | Hindon | 2,366 | 24,613 | 2,974 | 21,639 | 9.1 |
| D-6 | Kidderminster | 4,372 | 16,846 | 1,582 | 15,264 | 3.5 |
| C-7 | Louth | 6,496 | 11,761 | 3,114 | 8,647 | 1.3 |
| D-6 | Matlocks | 4,888 | 39,186 | 4,715 | 34,471 | 7.1 |
| C-6 | Shattesbury | 2,287 | 9,510 | 2,416 | 7,094 | 3.1 |
| C-6 | Thirsk | 1,832 | 131,934 | 64,734 | 67,200 | 36.7 |
| | PARIS | | | | | |
| H-10 | Alencon | 1,523 | 7,737 | 739 | 6,998 | 4.6 |
| G-12 | Barbados | 2,046 | 7,901 | 422 | 7,479 | 3.7 |
| H-10 | Bourges | 3,584 | 31,200 | 1,154 | 30,046 | 8.4 |
| H-10 | Chalet | 1,707 | 7,425 | 648 | 6,777 | 4.0 |
| H-11 | Chateau | 861 | 10,464 | 2,175 | 8,289 | 9.6 |
| G-11 | Damasco | 2,485 | 23,026 | 1,169 | 21,857 | 8.8 |
| G-11 | Felletin | 1,614 | 12,243 | 579 | 11,664 | 7.2 |

*Exhibit I-2-17. MAP LOCATION, AREA, URBAN AND RURAL POPULATION, AND RURAL POPULATION DENSITY, FOR DISTRICTS: 1960--Continued*

| Map location | District (zone) | Area (in km²) | Population, 1960 | | | Rural density |
|---|---|---|---|---|---|---|
| | | | Total | Urban | Rural | |
| | PARIS—Con. | | | | | |
| G-11 | Gisors | 886 | 17,930 | 5,192 | 12,738 | 14.4 |
| G-11 | Grecia | 1,819 | 13,980 | 503 | 13,477 | 7.4 |
| G-12 | La Grand Combe | 1,001 | 4,524 | 832 | 3,692 | 3.7 |
| G-11 | Moutier | 1,200 | 10,805 | 1,261 | 9,544 | 8.0 |
| H-10 | Nyons | 2,031 | 12,186 | 488 | 11,698 | 5.8 |
| H-11 | Prades | 1,394 | 10,588 | 1,147 | 9,441 | 6.8 |
| G-10 | Sao Paulo | 1,586 | 19,227 | 4,327 | 14,900 | 9.4 |
| G-12 | Tarbes | 1,907 | 16,783 | 2,011 | 14,772 | 7.7 |
| G-11 | Troy | 1,535 | 15,451 | 1,248 | 14,203 | 9.3 |
| G-10 | Vallon | 2,742 | 20,731 | 512 | 20,219 | 7.4 |
| G-10 | Vaucluse | 1,810 | 17,441 | 607 | 16,834 | 9.3 |
| | RAJPUR | | | | | |
| D-10 | Adoni | 3,466 | 21,452 | 4,022 | 17,430 | 5.0 |
| C-10 | Ajmer | 2,134 | 86,170 | 51,298 | 34,872 | 16.3 |
| D-9 | Baroda | 3,711 | 39,926 | 6,165 | 33,761 | 9.1 |
| D-11 | Bellary | 3,198 | 21,966 | 3,446 | 18,520 | 5.8 |
| F-10 | Bhopal | 3,521 | 25,713 | 1,150 | 24,563 | 7.0 |
| D-9 | Chanda | 3,276 | 40,021 | 2,147 | 37,874 | 11.6 |
| D-10 | Chirmuri | 3,668 | 40,294 | 1,631 | 38,663 | 10.5 |
| D-11 | Dabhor | 4,204 | 9,398 | 723 | 8,675 | 2.1 |
| E-11 | Jaipur | 3,246 | 8,672 | 468 | 8,204 | 2.5 |
| D-11 | Kanpur | 3,718 | 25,815 | 2,297 | 23,518 | 6.3 |
| E-10 | Karur | 3,956 | 28,912 | 2,146 | 26,766 | 6.8 |
| E-10 | Kistna | 3,258 | 12,914 | 883 | 12,031 | 3.7 |
| D-10 | Kolar | 2,402 | 28,501 | 428 | 28,073 | 11.7 |
| D-11 | Poona | 5,577 | 20,624 | 771 | 19,853 | 3.6 |
| D-10 | Ranchi | 3,381 | 34,669 | 3,177 | 31,492 | 9.3 |
| E-10 | Warangol | 3,667 | 55,833 | 11,036 | 44,797 | 12.2 |
| | RAMA | | | | | |
| H-9 | Bogra | 1,471 | 24,512 | 7,269 | 17,243 | 11.7 |
| I-9 | Bundi | 2,064 | 17,810 | 6,332 | 11,478 | 5.6 |
| H-8 | Colombia | 1,635 | 28,893 | 9,371 | 19,522 | 11.9 |
| H-8 | Davengere | 1,743 | 22,191 | 6,425 | 15,766 | 9.0 |
| I-8 | Karania | 2,306 | 18,734 | 5,449 | 13,285 | 5.8 |
| H-9 | Maleya | 2,512 | 16,847 | 5,979 | 10,868 | 4.3 |
| H-9 | Najina | 2,108 | 11,573 | 2,728 | 8,845 | 4.2 |
| H-9 | Patan | 3,568 | 16,456 | 611 | 15,845 | 4.4 |
| H-10 | Rampur | 2,286 | 18,611 | 2,853 | 15,758 | 6.9 |
| H-8 | Sirca | 2,062 | 21,625 | 3,617 | 18,008 | 8.7 |
| H-9 | Surat | 2,964 | 27,864 | 2,040 | 25,824 | 8.7 |
| H-8 | Tuni | 1,081 | 19,207 | 6,492 | 12,715 | 11.8 |
| H-8 | Vellore | 1,539 | 22,596 | 1,922 | 20,674 | 13.4 |
| H-8 | Victoria | 1,110 | 28,926 | 6,511 | 22,415 | 20.2 |
| I-9 | Wadi | 3,055 | 8,853 | 563 | 8,290 | 2.7 |
| | TALI | | | | | |
| H-7 | Acapulco | 3,447 | 57,345 | 5,239 | 52,106 | 15.1 |
| C-8 | Athens | 3,562 | 116,108 | 10,447 | 105,661 | 29.7 |
| B-9 | Baghdad | 2,244 | 48,673 | 5,450 | 43,223 | 19.3 |
| C-7 | Chicago | 1,635 | 30,402 | 2,978 | 27,424 | 16.8 |
| B-8 | Congo | 1,354 | 57,094 | 11,266 | 45,828 | 33.8 |
| B-7 | Delhi | 2,335 | 36,998 | 2,118 | 34,880 | 14.9 |
| C-7 | Chana | 3,289 | 54,177 | 2,667 | 51,510 | 15.7 |
| A-8 | Greenland | 3,960 | 66,436 | 3,887 | 62,549 | 15.8 |
| B-8 | Istanbul | 1,918 | 48,785 | 2,847 | 45,938 | 24.0 |
| C-8 | Karachi | 1,450 | 50,844 | 6,674 | 44,170 | 30.5 |
| C-8 | La Paz | 2,970 | 49,451 | 2,163 | 47,288 | 15.9 |
| B-7 | Manila | 1,378 | 69,999 | 22,315 | 47,684 | 34.6 |
| B-8 | Nikki | 2,014 | 37,526 | 3,448 | 34,078 | 16.9 |
| B-8 | Sokoto | 842 | 276,854 | 173,113 | 103,741 | 123.2 |
| C-8 | Wankie | 3,926 | 81,240 | 5,102 | 76,138 | 19.4 |
| | VALENCIA | | | | | |
| G-7 | Alberta | 1,516 | 26,075 | 8,430 | 17,645 | 11.6 |
| G-6 | Aragon | 4,227 | 18,353 | 3,927 | 14,426 | 3.4 |
| H-7 | Costa Brava | 3,649 | 23,003 | 2,874 | 20,129 | 5.5 |
| G-6 | El Dorado | 4,493 | 15,718 | 2,222 | 13,496 | 3.0 |
| G-7 | Las Cruces | 2,401 | 22,868 | 4,971 | 17,897 | 7.5 |
| F-6 | Logrono | 3,816 | 21,798 | 3,515 | 18,283 | 4.8 |
| F-7 | Monte Carlo | 2,549 | 32,721 | 2,736 | 29,985 | 11.8 |
| G-6 | Niza | 3,503 | 43,579 | 12,546 | 31,033 | 8.9 |
| G-7 | Pasto | 2,802 | 34,857 | 3,636 | 31,221 | 11.1 |
| H-7 | Puntarenas | 2,283 | 15,281 | 3,148 | 12,133 | 5.3 |
| E-12 | Atbara River Basin | 38,552 | 130,000 | 23,500 | 106,500 | 2.8 |
| D-13 | Northwest | 33,261 | 95,000 | 2,700 | 92,300 | 2.8 |
| E-13 | Subie Mountains | 22,926 | 75,000 | 1,100 | 73,900 | 3.2 |

*Estimated.
(X) Not applicable.

Source: 1960 Census of Population for the Provinces.

## *Exhibit I-2-18. NUMBER OF ENUMERATION AREAS AND AVERAGE POPULATION PER ENUMERATION AREA, BY DISTRICT, URBAN AND RURAL: 1960*

(Excludes Northern Territory)

| District | Number of EA's | | | Average population per EA | |
|---|---|---|---|---|---|
| | Total | Urban | Rural | Urban | Rural |
| **BOLIVAR** | | | | | |
| Arcadia | 28 | 8 | 20 | 388 | 456 |
| Barcelona | 45 | 12 | 33 | 348 | 391 |
| Colorado | 23 | 6 | 17 | 386 | 441 |
| Monaco | 47 | 2 | 45 | 421 | 501 |
| Nevada | 36 | 14 | 22 | 410 | 464 |
| Orlando | 58 | 32 | 26 | 430 | 447 |
| Palestina | 33 | 2 | 31 | 471 | 430 |
| Quito | 22 | 6 | 16 | 424 | 477 |
| **DEWAR** | | | | | |
| Angus | 51 | 13 | 38 | 375 | 435 |
| Daruel | 32 | 10 | 22 | 410 | 466 |
| Daviot | 47 | 11 | 36 | 451 | 430 |
| Gleneig | 93 | 5 | 88 | 452 | 530 |
| Hamilton | 69 | 3 | 66 | 383 | 515 |
| Latheron | 41 | 9 | 32 | 389 | 375 |
| Muthill | 59 | 22 | 37 | 436 | 425 |
| New Abbey | 37 | 6 | 31 | 393 | 504 |
| Pitlochry | 45 | 3 | 42 | 378 | 393 |
| Shieldaig | 30 | 8 | 22 | 495 | 473 |
| Torridon | 51 | 11 | 40 | 461 | 450 |
| Woodside | 33 | 12 | 21 | 448 | 358 |
| **DUBOIS** | | | | | |
| Aurillac | 257 | 156 | 101 | 527 | 562 |
| Bagnois | 51 | 12 | 39 | 441 | 483 |
| Cahors | 93 | 21 | 72 | 478 | 495 |
| Drome | 48 | 20 | 28 | 422 | 456 |
| Fontainbleau | 79 | 16 | 63 | 382 | 489 |
| Gannat | 58 | 7 | 51 | 401 | 421 |
| Gourdon | 81 | 6 | 75 | 391 | 478 |
| Morillon | 99 | 41 | 58 | 482 | 551 |
| Pontalier | 58 | 6 | 52 | 388 | 399 |
| Riberac | 60 | 14 | 46 | 468 | 539 |
| Rochefort | 51 | 6 | 45 | 411 | 494 |
| Sancerre | 62 | 5 | 57 | 421 | 471 |
| Tarn | 70 | 19 | 51 | 458 | 493 |
| Wassy | 49 | 7 | 42 | 449 | 548 |
| **HASSAM** | | | | | |
| Burdur | 31 | 7 | 24 | 398 | 463 |
| El Feser | 107 | 64 | 43 | 483 | 533 |
| Gandor | 52 | 31 | 21 | 465 | 456 |
| Giza | 171 | 90 | 81 | 507 | 529 |
| Hama | 73 | 5 | 68 | 433 | 513 |
| Kharga | 68 | 3 | 65 | 423 | 492 |
| Mersin | 78 | 24 | 54 | 439 | 496 |
| Saghbub | 33 | 8 | 25 | 450 | 453 |
| Shendi | 35 | 6 | 29 | 389 | 457 |
| **LIBERTO** | | | | | |
| Atessa | 128 | 18 | 110 | 457 | 520 |
| Cocina | 125 | 14 | 111 | 453 | 499 |
| Ferno | 147 | 7 | 140 | 423 | 475 |
| Larino | 60 | 9 | 51 | 393 | 409 |
| Lucra | 343 | 187 | 156 | 536 | 602 |
| Micastro | 165 | 26 | 139 | 398 | 448 |
| Osimo | 154 | 7 | 147 | 440 | 452 |
| Pergola | 109 | 7 | 102 | 386 | 404 |
| San Giovanni | 202 | 86 | 116 | 525 | 526 |
| Semara | 177 | 28 | 149 | 420 | 495 |
| Sesto | 70 | 7 | 63 | 451 | 297 |
| Venessa | 92 | 5 | 87 | 445 | 496 |
| **LOPEZ** | | | | | |
| Arizona | 111 | 15 | 96 | 498 | 577 |
| Aurora | 61 | 14 | 47 | 472 | 494 |
| Betances | 128 | 12 | 116 | 473 | 328 |
| Bilbao | 130 | 9 | 121 | 488 | 485 |
| Calfcut | 593 | 593 | (X) | 633 | (X) |
| Caribar | 93 | 12 | 81 | 517 | 503 |
| Constitucion | 80 | 14 | 66 | 468 | 540 |
| Daytona | 89 | 18 | 71 | 478 | 588 |
| Elba | 57 | 10 | 47 | 458 | 318 |
| Emela | 126 | 3 | 123 | 442 | 310 |
| Fontana | 87 | 6 | 81 | 428 | 471 |
| Galatea | 165 | 14 | 151 | 416 | 620 |
| Murcia | 184 | 16 | 168 | 442 | 532 |
| Ontario | 94 | 4 | 90 | 386 | 500 |
| Pasadina | 88 | 13 | 75 | 414 | 676 |
| Rulinda | 101 | 7 | 94 | 309 | 410 |
| Salome | 213 | 41 | 172 | 606 | 806 |
| Santa Ana | 443 | 226 | 217 | 639 | 840 |
| Sorento | 57 | 8 | 49 | 322 | 597 |
| Teruel | 57 | 6 | 51 | 593 | 550 |
| **LO-SAN-THO** | | | | | |
| Bangor | 56 | 16 | 40 | 332 | 468 |
| Cochabamba | 58 | 13 | 45 | 253 | 340 |
| Denizli | 37 | 1 | 36 | 625 | 308 |
| Halab | 60 | 18 | 42 | 341 | 322 |
| Jumba | 70 | 22 | 48 | 374 | 527 |
| Kabul | 55 | 18 | 37 | 254 | 419 |
| Larkana | 79 | 1 | 78 | 418 | 272 |
| Managua | 104 | 14 | 90 | 502 | 394 |
| Nigeria | 55 | 12 | 43 | 186 | 517 |
| Ream | 48 | 13 | 35 | 308 | 409 |
| Sumba | 56 | 16 | 40 | 323 | 412 |
| **MORGAN** | | | | | |
| Aspatria | 156 | 25 | 131 | 511 | 613 |
| Bowes | 151 | 19 | 132 | 338 | 585 |
| Carnforth | 143 | 23 | 120 | 535 | 527 |
| Edmunds | 91 | 20 | 71 | 407 | 501 |
| Glemford | 57 | 8 | 49 | 456 | 521 |
| Greenwich | 66 | 6 | 60 | 227 | 650 |
| Hindon | 60 | 5 | 55 | 595 | 393 |
| Kidderminster | 79 | 4 | 75 | 395 | 203 |
| Louth | 57 | 6 | 51 | 510 | 169 |
| Matlocks | 86 | 10 | 76 | 471 | 453 |
| Shattesbury | 42 | 5 | 37 | 483 | 192 |
| Thirsk | 238 | 135 | 103 | 479 | 652 |
| **PARIS** | | | | | |
| Alencon | 30 | 1 | 29 | 739 | 241 |
| Barbados | 39 | 1 | 38 | 422 | 197 |
| Bourges | 71 | 5 | 66 | 231 | 455 |
| Chalet | 33 | 1 | 32 | 648 | 212 |
| Chateau | 27 | 11 | 16 | 198 | 518 |
| Damasco | 50 | 5 | 45 | 234 | 486 |
| Felletin | 30 | 1 | 29 | 579 | 402 |
| Gisors | 31 | 15 | 16 | 346 | 708 |
| Grecia | 34 | 1 | 33 | 503 | 408 |
| La Grand Combe | 19 | 1 | 18 | 832 | 205 |
| Moutier | 25 | 3 | 22 | 420 | 434 |
| Nyons | 38 | 1 | 37 | 488 | 316 |
| Prades | 29 | 4 | 25 | 287 | 378 |
| Sao Paulo | 39 | 10 | 29 | 433 | 514 |
| Tarbes | 41 | 6 | 35 | 335 | 422 |
| Troy | 31 | 3 | 28 | 416 | 507 |
| Vallon | 51 | 1 | 50 | 512 | 404 |
| Vaucluse | 34 | 1 | 33 | 607 | 510 |
| **RAJPUR** | | | | | |
| Adoni | 43 | 8 | 35 | 503 | 498 |
| Ajmer | 186 | 113 | 73 | 454 | 478 |
| Baroda | 81 | 12 | 69 | 514 | 489 |
| Bellary | 45 | 7 | 38 | 492 | 487 |
| Bhopal | 53 | 3 | 50 | 383 | 491 |
| Chanda | 83 | 5 | 78 | 429 | 486 |
| Chirmuri | 82 | 4 | 78 | 408 | 496 |
| Dabhor | 17 | 1 | 16 | 723 | 542 |
| Jaipur | 17 | 1 | 16 | 468 | 513 |
| Kanpur | 56 | 4 | 52 | 574 | 452 |
| Karur | 60 | 4 | 56 | 536 | 478 |
| Kistna | 27 | 2 | 25 | 441 | 481 |
| Kolar | 59 | 1 | 58 | 428 | 484 |
| Poona | 40 | 1 | 39 | 771 | 509 |
| Ranchi | 70 | 6 | 64 | 529 | 492 |
| Warangol | 109 | 24 | 85 | 460 | 527 |
| **RAMA** | | | | | |
| Bogra | 42 | 18 | 24 | 404 | 718 |
| Bundi | 49 | 16 | 33 | 396 | 348 |
| Colombia | 45 | 19 | 26 | 493 | 751 |
| Davengere | 44 | 16 | 28 | 402 | 563 |
| Karania | 50 | 13 | 37 | 419 | 359 |
| Malega | 52 | 11 | 41 | 543 | 265 |
| Nagina | 43 | 9 | 34 | 303 | 260 |
| Patan | 60 | 1 | 59 | 611 | 269 |
| Rangpur | 47 | 9 | 38 | 317 | 415 |
| Sirsa | 44 | 11 | 33 | 329 | 546 |
| Surat | 54 | 6 | 48 | 340 | 538 |
| Tumi | 33 | 16 | 17 | 406 | 748 |
| Vellore | 29 | 4 | 25 | 480 | 827 |
| Victoria | 53 | 15 | 38 | 434 | 590 |
| Wadi | 30 | 1 | 29 | 563 | 286 |
| **TALI** | | | | | |
| Acapulco | 109 | 11 | 98 | 476 | 532 |
| Athens | 204 | 16 | 188 | 653 | 562 |
| Baghdad | 100 | 13 | 87 | 419 | 497 |
| Chicago | 58 | 7 | 51 | 425 | 538 |
| Congo | 113 | 22 | 91 | 512 | 504 |
| Delhi | 64 | 7 | 57 | 303 | 612 |
| Ghana | 97 | 8 | 89 | 333 | 579 |
| Greenland | 144 | 9 | 135 | 432 | 463 |
| Istanbul | 97 | 10 | 87 | 285 | 528 |
| Karachi | 85 | 12 | 73 | 556 | 605 |
| La Paz | 128 | 9 | 119 | 240 | 397 |
| Manila | 135 | 44 | 91 | 507 | 524 |
| Nikki | 121 | 9 | 112 | 383 | 304 |
| Sokoto | 518 | 330 | 188 | 525 | 552 |
| Wankie | 151 | 8 | 143 | 638 | 532 |
| **VALENCIA** | | | | | |
| Alberta | 69 | 20 | 49 | 421 | 360 |
| Aragon | 60 | 16 | 44 | 245 | 328 |
| Costa Brava | 77 | 9 | 68 | 319 | 296 |
| El Dorado | 78 | 6 | 72 | 370 | 187 |
| Las Cruces | 46 | 12 | 34 | 414 | 526 |
| Logrono | 89 | 6 | 83 | 586 | 220 |
| Monte Carlo | 59 | 7 | 52 | 391 | 577 |
| Nisa | 99 | 34 | 65 | 369 | 477 |
| Pasto | 80 | 13 | 67 | 280 | 466 |
| Puntarenas | 29 | 7 | 22 | 450 | 551 |

(X) Not applicable.

Source: 1960 Census of Population for the Provinces.

*Exhibit I-2-19. NUMBER OF AGRICULTURAL HOLDINGS AND AREA IN HOLDINGS, BY PROVINCES: 1961*

| Province | Approximate total land area (hectares) | Holdings | | Area in holding (hectares) | | | Average size per holding |
|---|---|---|---|---|---|---|---|
| | | Number | Percent | Number | Percent distribution | Percent of total land area | |
| Total | 42,402,200 | 806,359 | 100.0 | 20,284,350 | 100.0 | 47.8 | 25.2 |
| Bolivar | 1,350,300 | 14,218 | 1.8 | 550,299 | 2.7 | 40.8 | 38.7 |
| Dewar | 3,600,200 | 29,220 | 3.6 | 1,550,952 | 7.6 | 43.1 | 53.1 |
| DuBois | 3,004,300 | 57,028 | 7.1 | 1,656,608 | 8.2 | 55.1 | 29.0 |
| Hassam | 2,137,800 | 24,620 | 3.0 | 1,119,721 | 5.5 | 52.4 | 45.5 |
| Liberto | 2,659,100 | 107,832 | 13.4 | 1,098,344 | 5.4 | 41.3 | 10.2 |
| Lopez | 4,623,400 | 181,150 | 22.5 | 2,933,716 | 14.5 | 63.5 | 16.2 |
| Lo-San-Tho | 2,542,000 | 31,316 | 3.9 | 1,282,825 | 6.3 | 50.5 | 41.0 |
| Morgan | 3,766,700 | 73,920 | 9.2 | 1,143,603 | 5.6 | 30.4 | 15.5 |
| Paris | 3,173,100 | 33,742 | 4.2 | 1,205,049 | 5.9 | 38.0 | 35.7 |
| Rajpur | 5,638,300 | 60,105 | 7.4 | 3,049,093 | 15.0 | 54.1 | 50.7 |
| Rama | 3,150,700 | 32,563 | 4.0 | 1,382,628 | 6.8 | 43.9 | 42.5 |
| Tali | 3,632,400 | 136,512 | 16.9 | 2,000,087 | 9.9 | 55.1 | 14.7 |
| Valencia | 3,123,900 | 24,133 | 3.0 | 1,311,425 | 6.6 | 42.0 | 54.3 |

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-20. ESTIMATED NUMBER OF AGRICULTURAL HOLDINGS FOR DISTRICTS: 1961*

(Excludes Northern Territory)

| Province and district | Number of holdings |
|---|---|
| **BOLIVAR** | |
| Arcadia | 1,360 |
| Barcelona | 1,980 |
| Colorado | 1,120 |
| Monaco | 3,370 |
| Nevada | 1,520 |
| Orlando | 1,740 |
| Palestina | 1,990 |
| Quito | 1,140 |
| **DEWAR** | |
| Angus | 2,210 |
| Daruel | 1,370 |
| Daviot | 2,060 |
| Gleneig | 6,220 |
| Hamilton | 4,530 |
| Latheron | 1,600 |
| Muthill | 2,100 |
| New Abbey | 2,080 |
| Pitlochry | 2,200 |
| Shieldaig | 1,390 |
| Torridon | 2,400 |
| Woodside | 1,060 |
| **DUBOIS** | |
| Aurillac | 8,340 |
| Bagnois | 2,770 |
| Cahors | 5,240 |
| Drome | 1,920 |
| Fontainbleau | 4,530 |
| Gannat | 3,150 |
| Gourdon | 5,270 |
| Morillon | 4,700 |
| Pontalier | 3,150 |
| Riberac | 3,650 |
| Rochefort | 3,270 |
| Sancerre | 3,950 |
| Tarn | 3,700 |
| Wassy | 3,380 |
| **HASSAM** | |
| Burdur | 1,340 |
| El Feser | 2,760 |
| Gandor | 1,150 |
| Giza | 5,130 |
| Hama | 4,200 |
| Kharga | 3,850 |
| Mersin | 3,230 |
| Saghbub | 1,360 |
| Shendi | 1,600 |
| **LIBERTO** | |
| Atessa | 9,380 |
| Cocina | 9,080 |
| Fermo | 10,910 |
| Larino | 3,620 |
| Lucra | 14,680 |
| Nicastro | 10,210 |
| Osimo | 10,890 |
| Pergola | 7,060 |
| San Giovanni | 9,300 |
| Semara | 12,080 |
| Sesto | 3,560 |
| Venessa | 7,070 |
| **LOPEZ** | |
| Arizona | 9,230 |
| Aurora | 3,870 |
| Betances | 6,340 |
| Bilbao | 9,780 |
| Calicut | - |
| Caribar | 6,790 |
| Constitucion | 5,940 |
| Daytona | 6,960 |
| Elba | 2,490 |
| Emela | 6,370 |
| Fontana | 6,360 |
| Galatea | 15,590 |
| Murcia | 14,900 |
| Ontario | 7,510 |
| Pasadina | 8,450 |
| Rulinda | 6,420 |
| Salome | 23,600 |
| Santa Ana | 31,020 |
| Sorento | 4,870 |
| Teruel | 4,670 |
| **LO-SAN-THO** | |
| Bangor | 2,850 |
| Cochabamba | 2,290 |
| Denizli | 1,710 |
| Halab | 2,020 |
| Jumba | 3,780 |
| Kabul | 2,310 |
| Larkana | 3,170 |
| Managua | 5,290 |
| Nigeria | 3,320 |
| Ream | 2,130 |
| Sumba | 2,460 |
| **MORGAN** | |
| Aspatria | 13,550 |
| Bowes | 13,070 |
| Carnforth | 9,890 |
| Edmunds | 5,560 |
| Glemford | 3,990 |
| Greenwich | 6,100 |
| Hindon | 3,380 |
| Kidderminster | 4,390 |
| Louth | 5,350 |
| Matlocks | 5,390 |
| Shattesbury | 2,210 |
| Thirsk | 1,050 |
| **PARIS** | |
| Alencon | 1,000 |
| Barbados | 1,070 |
| Bourges | 4,290 |
| Chalet | 970 |
| Chateau | 1,180 |
| Damasco | 3,120 |
| Felletin | 1,720 |
| Gisors | 1,820 |
| Grecia | 1,930 |
| La Grand Combe | 500 |
| Moutier | 1,460 |
| Nyons | 1,770 |
| Prades | 1,350 |
| Sao Paulo | 2,130 |
| Tarbes | 2,110 |
| Troy | 2,030 |
| Vallon | 2,890 |
| Vaucluse | 2,400 |
| **RAJPUR** | |
| Adoni | 2,260 |
| Ajmer | 4,130 |
| Baroda | 5,170 |
| Bellary | 2,720 |
| Bhopal | 3,610 |
| Chanda | 5,170 |
| Chirmuri | 5,390 |
| Dabhor | 2,170 |
| Jaipur | 2,100 |
| Kanpur | 3,730 |
| Karur | 3,940 |
| Kistna | 3,050 |
| Kolar | 2,480 |
| Poona | 5,410 |
| Ranchi | 3,190 |
| Warangol | 5,590 |
| **RAMA** | |
| Bogra | 2,360 |
| Bundi | 1,570 |
| Colombia | 2,680 |
| Davengere | 2,160 |
| Karania | 1,820 |
| Malega | 1,490 |
| Nagina | 1,270 |
| Patan | 2,170 |
| Rangpur | 2,160 |
| Sirsa | 2,470 |
| Surat | 3,540 |
| Tuni | 1,740 |
| Vellore | 2,830 |
| Victoria | 3,070 |
| Wadi | 1,240 |
| **TALI** | |
| Acapulco | 8,680 |
| Athens | 17,610 |
| Baghdad | 7,200 |
| Chicago | 4,570 |
| Congo | 7,640 |
| Delhi | 5,810 |
| Ghana | 8,590 |
| Greenland | 10,430 |
| Istanbul | 7,660 |
| Karachi | 7,360 |
| La Paz | 7,880 |
| Manila | 7,950 |
| Nikki | 5,680 |
| Sokoto | 16,770 |
| Wanki | 12,690 |
| **VALENCIA** | |
| Alberta | 2,080 |
| Aragon | 1,730 |
| Costa Brava | 2,370 |
| El Dorado | 1,620 |
| Las Cruses | 2,100 |
| Logrono | 2,150 |
| Monte Carlo | 3,430 |
| Niza | 3,550 |
| Pasto | 3,670 |
| Puntarenas | 1,430 |

*Exhibit I-2-21. NUMBER OF AGRICULTURAL HOLDINGS BY SIZE OF HOLDING, BY PROVINCES: 1961*
(Excludes Northern Territory. Number of holdings rounded to nearest hundred)

| Size of holding (hectares) | Provinces | | | Bolivar | | | Devar | | | DuBois | | | Hassam | | | Liberto | | | Lopez | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of holdings | Percent | | Number of holdings | Percent | | Number of holdings | Percent | | Number of holdings | Percent | | Number of holdings | Percent | | Number of holdings | Percent | | Number of holdings | Percent | |
| | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative |
| Total..... | 806,400 | 100.0 | - | 14,200 | 100.0 | - | 29,200 | 100.0 | - | 57,000 | 100.0 | - | 24,600 | 100.0 | - | 107,200 | 100.0 | - | 181,200 | 100.0 | - |
| 0.5 to 0.9..... | 68,100 | 8.4 | 8.4 | 500 | 3.2 | 3.2 | 1,700 | 5.7 | 5.7 | 5,200 | 9.1 | 9.1 | 1,500 | 6.2 | 6.2 | 13,400 | 12.4 | 12.4 | 17,900 | 9.9 | 9.9 |
| 1.0 to 1.9..... | 90,700 | 11.3 | 19.7 | 1,000 | 7.0 | 10.2 | 1,900 | 6.5 | 12.2 | 5,400 | 9.5 | 18.6 | 1,400 | 5.6 | 11.8 | 14,800 | 13.6 | 26.1 | 31,300 | 17.3 | 27.2 |
| 2.0 to 2.9..... | 89,200 | 11.0 | 30.7 | 1,000 | 7.1 | 17.3 | 2,200 | 7.6 | 19.8 | 6,000 | 10.6 | 29.2 | 1,400 | 5.7 | 17.5 | 14,800 | 13.8 | 39.9 | 27,500 | 15.1 | 42.3 |
| 3.0 to 3.9..... | 94,000 | 11.7 | 42.4 | 1,600 | 11.3 | 28.6 | 2,400 | 8.1 | 27.9 | 7,700 | 13.4 | 42.6 | 1,900 | 7.8 | 25.3 | 13,200 | 11.2 | 52.1 | 25,500 | 14.1 | 56.4 |
| 4.0 to 4.9..... | 91,300 | 11.3 | 53.7 | 2,000 | 13.7 | 42.3 | 2,900 | 9.9 | 37.8 | 6,500 | 11.4 | 54.0 | 2,100 | 8.6 | 33.9 | 15,800 | 14.6 | 66.7 | 18,800 | 10.4 | 66.8 |
| 5.0 to 9.9..... | 156,300 | 19.4 | 73.1 | 3,200 | 22.5 | 64.8 | 6,000 | 20.6 | 58.4 | 12,100 | 21.2 | 75.2 | 2,800 | 11.3 | 45.2 | 24,500 | 22.7 | 89.4 | 29,300 | 16.1 | 82.9 |
| 10.0 to 19.9..... | 106,700 | 13.3 | 86.4 | 2,500 | 17.7 | 82.5 | 3,800 | 13.2 | 71.6 | 6,600 | 11.6 | 86.8 | 4,300 | 17.5 | 62.7 | 7,300 | 6.8 | 96.2 | 21,700 | 12.0 | 94.9 |
| 20.0 to 49.9..... | 56,000 | 6.9 | 93.3 | 1,000 | 7.1 | 89.6 | 2,000 | 6.9 | 78.5 | 4,300 | 7.5 | 94.3 | 6,300 | 25.8 | 88.5 | 2,500 | 2.3 | 98.5 | 6,400 | 3.5 | 98.4 |
| 50.0 to 99.9..... | 20,500 | 2.5 | 95.8 | 600 | 4.3 | 93.9 | 1,700 | 5.9 | 84.4 | 1,500 | 2.5 | 96.8 | 1,600 | 6.6 | 95.1 | 700 | 0.7 | 99.2 | 500 | 0.3 | 98.7 |
| 100.0 to 199.9..... | 19,100 | 2.4 | 98.2 | 300 | 2.2 | 96.1 | 2,900 | 9.7 | 94.1 | 1,000 | 1.8 | 98.6 | 600 | 2.4 | 97.5 | 600 | 0.5 | 99.7 | 1,000 | 0.5 | 99.2 |
| 200.0 to 499.9..... | 10,800 | 1.4 | 99.6 | 400 | 3.1 | 99.2 | 1,700 | 5.7 | 99.8 | 400 | 0.7 | 99.3 | 400 | 1.6 | 99.1 | 200 | 0.2 | 99.9 | 400 | 0.2 | 99.4 |
| 500.0 or more... | 3,600 | 0.4 | 100.0 | 100 | 0.8 | 100.0 | 100 | 0.2 | 100.0 | 400 | 0.7 | 100.0 | 200 | 0.9 | 100.0 | 200 | 0.2 | 100.0 | 1,000 | 0.6 | 100.0 |

| Size of holding (hectares) | Lo-Sau-Tho | | | Morgan | | | Paris | | | Rajpur | | | Rama | | | Tali | | | Valencia | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of holdings | Percent | | Number of holdings | Percent | | Number of holdings | Percent | | Number of holdings | Percent | | Number of holdings | Percent | | Number of holdings | Percent | | Number of holdings | Percent | |
| | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative |
| Total..... | 31,300 | 100.0 | - | 73,900 | 100.0 | - | 33,700 | 100.0 | - | 60,100 | 100.0 | - | 32,600 | 100.0 | - | 136,500 | 100.0 | - | 24,100 | 100.0 | - |
| 0.5 to 0.9..... | 1,000 | 3.1 | 3.1 | 6,500 | 8.7 | 8.7 | 900 | 2.7 | 2.7 | 2,000 | 3.4 | 3.4 | 1,800 | 5.4 | 5.4 | 15,000 | 11.0 | 11.0 | 900 | 3.8 | 3.8 |
| 1.0 to 1.9..... | 2,600 | 8.2 | 11.3 | 8,300 | 11.3 | 20.0 | 1,500 | 4.4 | 7.1 | 3,800 | 6.4 | 9.8 | 1,500 | 4.6 | 10.0 | 16,500 | 12.0 | 23.0 | 700 | 2.8 | 6.6 |
| 2.0 to 2.9..... | 3,500 | 11.1 | 22.4 | 8,200 | 11.1 | 31.1 | 2,900 | 8.5 | 15.6 | 3,600 | 6.0 | 15.8 | 1,200 | 3.7 | 13.7 | 15,200 | 11.2 | 34.2 | 1,700 | 7.2 | 13.8 |
| 3.0 to 3.9..... | 3,200 | 10.2 | 32.6 | 8,600 | 11.7 | 42.8 | 3,000 | 8.8 | 24.4 | 6,800 | 11.2 | 27.0 | 1,100 | 3.4 | 17.1 | 16,800 | 12.2 | 46.4 | 2,300 | 9.6 | 23.4 |
| 4.0 to 4.9..... | 3,600 | 11.4 | 44.0 | 8,700 | 11.8 | 54.6 | 3,800 | 11.4 | 35.8 | 5,800 | 9.6 | 36.6 | 1,400 | 4.2 | 21.3 | 18,000 | 13.2 | 59.6 | 2,300 | 9.2 | 32.6 |
| 5.0 to 9.9..... | 6,100 | 19.4 | 63.4 | 16,800 | 22.3 | 76.9 | 7,700 | 22.7 | 58.5 | 11,400 | 18.9 | 55.5 | 6,300 | 19.2 | 40.5 | 26,300 | 19.3 | 78.9 | 4,800 | 17.4 | 50.0 |
| 10.0 to 19.9..... | 4,200 | 13.3 | 76.7 | 11,600 | 15.7 | 92.6 | 5,300 | 15.6 | 74.1 | 7,900 | 13.2 | 68.7 | 8,800 | 26.9 | 67.4 | 19,300 | 14.1 | 93.0 | 3,400 | 14.1 | 64.1 |
| 20.0 to 49.9..... | 2,200 | 7.0 | 83.7 | 3,200 | 4.3 | 96.9 | 4,800 | 14.1 | 88.2 | 9,700 | 16.0 | 84.7 | 4,600 | 14.1 | 81.5 | 6,500 | 4.8 | 97.8 | 2,700 | 11.1 | 75.2 |
| 50.0 to 99.9..... | 2,700 | 8.7 | 92.4 | 900 | 1.2 | 98.1 | 2,300 | 6.9 | 95.1 | 2,400 | 4.0 | 88.7 | 3,200 | 9.8 | 91.3 | 900 | 0.7 | 98.5 | 2,200 | 9.2 | 84.4 |
| 100.0 to 199.9.. | 1,700 | 5.6 | 98.0 | 800 | 1.0 | 99.1 | 1,200 | 3.5 | 98.6 | 3,700 | 6.2 | 94.9 | 2,200 | 6.7 | 98.0 | 900 | 0.6 | 99.1 | 2,400 | 9.8 | 94.2 |
| 200.0 to 499.9.. | 400 | 1.3 | 99.3 | 500 | 0.7 | 99.8 | 300 | 0.8 | 99.4 | 2,700 | 4.4 | 99.3 | 1,400 | 4.3 | 99.4 | 900 | 0.6 | 99.7 | 1,200 | 5.1 | 99.3 |
| 500.0 or more... | 200 | 0.7 | 100.0 | 200 | 0.2 | 100.0 | 200 | 0.6 | 100.0 | 400 | 0.7 | 100.0 | 100 | 0.3 | 100.0 | 300 | 0.3 | 100.0 | 200 | 0.7 | 100.0 |

- Entry represents zero.

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-22. AREA OF AGRICULTURAL HOLDINGS BY SIZE OF HOLDING, BY PROVINCES: 1961*

(Number of hectares rounded to nearest hundred)

| Size of holding (hectares) | Provinces | | | Bolivar | | | Dewar | | | DuBois | | | Hassam | | | Liberto | | | Lopez | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Area in holdings (hectares) | Percent | | Area in holdings (hectares) | Percent | | Area in holdings (hectares) | Percent | | Area in holdings (hectares) | Percent | | Area in holdings (hectares) | Percent | | Area in holdings (hectares) | Percent | | Area in holdings (hectares) | Percent | |
| | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative | | Distribution | Cumulative |
| Total.... | 20,284,400 | 100.0 | - | 550,200 | 100.0 | - | 1,551,000 | 100.0 | - | 1,656,600 | 100.0 | - | 1,119,700 | 100.0 | - | 1,098,300 | 100.0 | - | 2,933,700 | 100.0 | - |
| 0.5 to 0.9..... | 43,300 | 0.2 | 0.2 | 300 | - | - | 1,200 | 0.1 | 0.1 | 3,600 | 0.2 | 0.2 | 1,000 | 0.1 | 0.1 | 8,300 | 0.8 | 0.8 | 10,400 | 0.4 | 0.4 |
| 1.0 to 1.9..... | 119,700 | 0.6 | 0.8 | 1,400 | 0.3 | 0.3 | 2,900 | 0.2 | 0.3 | 17,700 | 0.5 | 0.7 | 1,800 | 0.2 | 0.3 | 18,700 | 1.7 | 2.5 | 49,400 | 1.3 | 1.7 |
| 2.0 to 2.9..... | 216,700 | 1.1 | 1.9 | 2,500 | 0.4 | 0.7 | 5,100 | 0.3 | 0.6 | 24,600 | 0.9 | 1.6 | 3,600 | 0.3 | 0.6 | 35,600 | 3.2 | 5.7 | 68,000 | 2.3 | 4.0 |
| 3.0 to 3.9..... | 293,400 | 1.4 | 3.4 | 8,500 | 1.7 | 2.3 | 8,200 | 0.5 | 1.2 | 40,600 | 1.5 | 3.1 | 6,600 | 0.6 | 0.8 | 43,100 | 3.9 | 9.6 | 86,900 | 3.0 | 7.0 |
| 4.0 to 4.9..... | 391,400 | 1.9 | 5.3 | 8,100 | 1.5 | 3.8 | 12,600 | 0.8 | 2.0 | 37,600 | 1.4 | 4.5 | 9,600 | 0.8 | 1.6 | 67,700 | 6.2 | 15.8 | 89,000 | 2.7 | 9.7 |
| 5.0 to 9.9..... | 1,078,100 | 5.3 | 10.7 | 21,800 | 3.9 | 7.2 | 44,000 | 2.8 | 4.8 | 83,400 | 5.0 | 9.8 | 20,300 | 1.8 | 3.8 | 162,100 | 14.8 | 30.6 | 197,400 | 6.8 | 16.5 |
| 10.0 to 19.9.... | 1,458,600 | 7.2 | 17.9 | 35,600 | 6.5 | 13.7 | 54,100 | 3.5 | 8.3 | 87,200 | 5.3 | 15.1 | 63,500 | 5.7 | 9.5 | 98,300 | 8.9 | 39.5 | 272,100 | 9.2 | 25.7 |
| 20.0 to 49.9.... | 1,710,600 | 8.4 | 26.3 | 33,500 | 6.1 | 19.8 | 61,300 | 4.0 | 12.3 | 124,200 | 7.5 | 22.6 | 206,400 | 18.4 | 27.9 | 68,200 | 6.2 | 45.7 | 194,800 | 6.7 | 32.4 |
| 50.0 to 99.9.... | 1,453,500 | 7.2 | 33.5 | 43,800 | 7.9 | 27.7 | 127,900 | 8.2 | 20.5 | 95,200 | 5.7 | 28.3 | 116,000 | 10.4 | 38.3 | 52,200 | 5.2 | 50.5 | 32,700 | 1.1 | 33.4 |
| 100.0 to 199.9.. | 2,565,100 | 12.6 | 46.1 | 43,300 | 7.9 | 35.6 | 397,800 | 25.7 | 46.2 | 134,500 | 8.2 | 36.5 | 78,900 | 7.0 | 45.3 | 73,700 | 6.7 | 57.2 | 126,200 | 4.3 | 37.8 |
| 200.0 to 499.9.. | 3,435,800 | 17.0 | 63.1 | 142,200 | 25.8 | 61.4 | 553,800 | 35.7 | 81.9 | 130,100 | 7.8 | 44.3 | 122,700 | 11.0 | 56.3 | 47,500 | 4.3 | 61.5 | 103,600 | 3.5 | 41.3 |
| 500.0 or more... | 7,489,900 | 36.9 | 100.0 | 212,200 | 28.6 | 100.0 | 281,300 | 18.1 | 100.0 | 922,600 | 55.7 | 100.0 | 489,400 | 43.7 | 100.0 | 422,900 | 38.5 | 100.0 | 1,721,400 | 58.7 | 100.0 |
| | Lo-San-Tho | | | Morgan | | | Paris | | | Rajpur | | | Rama | | | Tait | | | Valencia | | |
| Total.... | 1,282,800 | 100.0 | - | 1,143,600 | 100.0 | - | 1,205,000 | 100.0 | - | 3,049,100 | 100.0 | - | 1,382,600 | 100.0 | - | 2,000,100 | 100.0 | - | 1,311,400 | 100.0 | - |
| 0.5 to 0.9..... | 800 | 0.1 | 0.1 | 4,300 | 0.4 | 0.4 | 600 | - | - | 1,400 | - | - | 1,800 | 0.1 | 0.1 | 9,300 | 0.5 | 0.5 | 700 | - | - |
| 1.0 to 1.9..... | 3,400 | 0.2 | 0.3 | 12,800 | 1.1 | 1.5 | 2,100 | 0.2 | 0.2 | 5,500 | 0.2 | 0.2 | 2,800 | 0.2 | 0.3 | 21,600 | 1.1 | 1.7 | 1,300 | 0.1 | 0.1 |
| 2.0 to 2.9..... | 8,600 | 0.7 | 1.0 | 19,700 | 1.7 | 3.2 | 6,900 | 0.6 | 0.8 | 13,600 | 0.5 | 0.7 | 3,700 | 0.2 | 0.5 | 35,800 | 1.7 | 3.5 | 4,300 | 0.3 | 0.5 |
| 3.0 to 3.9..... | 10,300 | 0.8 | 1.8 | 28,800 | 2.6 | 5.6 | 10,300 | 0.9 | 1.7 | 24,000 | 0.8 | 1.3 | 3,700 | 0.2 | 0.7 | 37,400 | 1.9 | 5.2 | 7,900 | 0.6 | 1.1 |
| 4.0 to 4.9..... | 15,700 | 1.2 | 3.0 | 37,200 | 3.2 | 8.8 | 16,800 | 1.3 | 3.0 | 25,800 | 0.9 | 2.2 | 3,900 | 0.3 | 0.9 | 76,400 | 3.8 | 10.0 | 9,800 | 0.7 | 1.8 |
| 5.0 to 9.9..... | 44,000 | 3.5 | 6.5 | 111,400 | 9.8 | 18.6 | 54,900 | 4.6 | 7.6 | 84,100 | 2.7 | 4.9 | 46,200 | 3.3 | 4.5 | 178,300 | 8.9 | 18.9 | 30,300 | 2.3 | 4.1 |
| 10.0 to 19.9.... | 60,000 | 4.6 | 11.1 | 154,300 | 13.4 | 32.0 | 76,200 | 5.3 | 13.9 | 110,300 | 3.7 | 8.6 | 130,100 | 9.4 | 13.9 | 264,300 | 13.3 | 32.2 | 52,600 | 4.0 | 8.1 |
| 20.0 to 49.9.... | 66,600 | 5.2 | 16.3 | 95,500 | 8.0 | 40.0 | 130,400 | 10.9 | 24.8 | 304,600 | 9.9 | 18.5 | 141,800 | 9.3 | 24.2 | 196,400 | 9.8 | 42.0 | 86,900 | 6.6 | 14.7 |
| 50.0 to 99.9.... | 196,700 | 15.4 | 31.7 | 62,600 | 5.9 | 45.9 | 167,600 | 13.9 | 38.7 | 173,400 | 5.7 | 24.2 | 162,900 | 11.7 | 35.9 | 65,500 | 3.2 | 45.2 | 157,100 | 11.6 | 26.3 |
| 100.0 to 199.9.. | 234,400 | 18.2 | 49.9 | 97,400 | 8.5 | 54.4 | 155,400 | 12.9 | 51.6 | 498,000 | 16.4 | 40.6 | 289,600 | 21.0 | 56.9 | 111,800 | 5.6 | 50.8 | 324,200 | 25.1 | 51.4 |
| 200.0 to 499.9.. | 130,000 | 10.2 | 60.1 | 137,600 | 12.0 | 66.4 | 83,700 | 6.9 | 58.5 | 866,600 | 28.4 | 69.0 | 434,800 | 31.4 | 88.3 | 276,300 | 13.9 | 64.7 | 407,100 | 31.1 | 82.5 |
| 500.0 or more.. | 512,400 | 39.9 | 100.0 | 384,000 | 33.6 | 100.0 | 500,000 | 41.5 | 100.0 | 945,800 | 31.0 | 100.0 | 161,400 | 11.7 | 100.0 | 707,000 | 35.3 | 100.0 | 229,500 | 17.5 | 100.0 |

- Entry represents zero or less than 0.05 percent.

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-23. LARGE AGRICULTURAL HOLDINGS BY TYPE OF HOLDING, BY PROVINCES: 1961*

| Major agricultural product | Total | | | Bolivar | Dewar | DuBois | Hassam | Liberto |
|---|---|---|---|---|---|---|---|---|
| | 500 to 999 hectares | 1,000 to 2,499 hectares | 2,500 or more hectares | | | | | |
| Total large holdings[1] | 1,329 | 1,152 | 1,098 | 108 | 60 | 378 | 230 | 152 |
| Bananas | 5 | 23 | 6 | - | - | - | 9 | - |
| Coconuts | 4 | 49 | 10 | - | - | - | 27 | - |
| Coffee | 88 | 243 | 37 | - | - | 27 | 10 | 63 |
| Cotton | 98 | 163 | 11 | - | - | 72 | 75 | - |
| Maize | 69 | - | - | - | - | - | 4 | - |
| Mixed vegetables | 24 | - | 1 | - | - | 9 | 1 | - |
| Nurseries | 2 | - | - | - | - | - | - | - |
| Oranges | 18 | - | - | - | - | 2 | 1 | - |
| Peanuts (groundnuts) | 255 | 19 | 8 | - | 16 | 28 | - | 14 |
| Pineapples | 10 | 11 | 2 | - | - | - | 7 | - |
| Rice | 105 | - | - | - | 3 | - | 6 | - |
| Rubber | 4 | 27 | 28 | - | 18 | - | - | - |
| Sisal | 10 | 15 | - | - | - | 2 | 5 | - |
| Sorghum | 113 | 9 | - | - | - | - | 15 | - |
| Sugarcane | 39 | 32 | 13 | - | - | - | 2 | - |
| Tea | 30 | 44 | - | - | - | 7 | - | 25 |
| Tobacco | 78 | 1 | - | - | 5 | 9 | 3 | - |
| Wheat | 143 | 17 | - | 13 | - | 16 | - | - |
| Cattle | 185 | 377 | 741 | 29 | 17 | 183 | 49 | 37 |
| Sheep | 43 | 91 | 114 | 43 | 1 | - | 2 | 8 |
| Goats | - | 1 | 11 | - | - | 3 | - | 5 |
| Cattle and maize | - | 11 | 69 | - | - | 20 | 12 | - |
| Cattle and sorghum | 1 | 7 | 43 | 2 | - | - | 2 | - |
| Cattle and wheat | 5 | 12 | 4 | 21 | - | - | - | - |

| | Lopez | Lo-San-Tho | Morgan | Paris | Rajpur | Rama | Tali | Valencia |
|---|---|---|---|---|---|---|---|---|
| Total large holdings[1] | 1,030 | 216 | 170 | 207 | 400 | 103 | 347 | 178 |
| Bananas | - | - | - | - | 12 | 3 | 8 | 2 |
| Coconuts | - | - | - | - | 18 | - | 18 | - |
| Coffee | 169 | - | 43 | - | 20 | - | 27 | 9 |
| Cotton | 97 | - | - | - | 28 | - | - | - |
| Maize | 39 | - | - | 3 | 5 | 6 | - | 12 |
| Mixed vegetables | 3 | - | - | - | 2 | - | 10 | - |
| Nurseries | 2 | - | - | - | - | - | - | - |
| Oranges | - | - | - | - | 7 | 2 | - | 6 |
| Peanuts (groundnuts) | 126 | 10 | 7 | - | 13 | 29 | - | 39 |
| Pineapples | - | - | - | - | 11 | - | 5 | - |
| Rice | - | - | - | - | 6 | 12 | 62 | 16 |
| Rubber | - | - | - | - | - | 1 | 30 | 10 |
| Sisal | 15 | - | - | - | 3 | - | - | - |
| Sorghum | 85 | - | - | 8 | 7 | 2 | - | 5 |
| Sugarcane | - | - | - | - | 9 | - | 73 | - |
| Tea | - | - | 33 | - | - | - | - | 9 |
| Tobacco | 62 | - | - | - | - | - | - | - |
| Wheat | 39 | 26 | - | 33 | 24 | 9 | - | - |
| Cattle | 299 | 132 | 57 | 79 | 200 | 37 | 114 | 70 |
| Sheep | 4 | 48 | 28 | 79 | 35 | - | - | - |
| Goats | - | - | 2 | - | - | 2 | - | - |
| Cattle and maize | 47 | - | - | 1 | - | - | - | - |
| Cattle and sorghum | 43 | - | - | 4 | - | - | - | - |
| Cattle and wheat | - | - | - | - | - | - | - | - |

- Entry represents zero.
[1]Holdings of 500 hectares or more.

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-24. LARGE AGRICULTURAL HOLDINGS BY SIZE OF HOLDING, CROP AREA, AND LIVESTOCK INVENTORY: 1961*

(Excludes Northern Territory)

| Subject | All holdings | Holdings under 500 hectares | Large holdings | | | | |
|---|---|---|---|---|---|---|---|
| | | | Total | | 500 to 999 hectares | 1,000 to 2,499 hectares | 2,500 or more hectares |
| | | | Number | Percent of all holdings | | | |
| Number of holdings | 806,359 | 802,780 | 3,579 | 0.4 | 1,329 | 1,152 | 1,098 |
| Area in holdings.....hectares.. | 20,284,350 | 12,794,440 | 7,489,910 | 36.9 | 949,095 | 1,614,278 | 4,926,537 |
| Crop area in-- | | | | | | | |
| Bananas.....hectares.. | 49,105 | 7,857 | 41,199 | 83.9 | 1,688 | 19,951 | 19,560 |
| Coffee.....hectares.. | 217,580 | 40,905 | 176,675 | 81.2 | 20,209 | 110,071 | 46,395 |
| Cotton.....hectares.. | 437,568 | 98,140 | 339,428 | 77.6 | 69,350 | 248,888 | 21,190 |
| Maize.....hectares.. | 1,380,397 | 1,198,703 | 181,694 | 13.2 | 50,720 | 13,674 | 117,300 |
| Rice.....hectares.. | 591,840 | 521,440 | 70,400 | 11.9 | 70,400 | - | - |
| Rubber.....hectares.. | 61,735 | 1,753 | 59,982 | 97.2 | 3,050 | 22,790 | 34,142 |
| Sugarcane.....hectares.. | 85,957 | 9,713 | 76,244 | 88.7 | 15,680 | 31,964 | 28,600 |
| Wheat.....hectares.. | 429,082 | 324,802 | 104,280 | 24.3 | 75,530 | 20,930 | 7,820 |
| Number of-- | | | | | | | |
| Cattle and calves ..... | 4,594,510 | 1,068,235 | 3,526,275 | 76.7 | 95,670 | 505,580 | 2,925,025 |
| Sheep and lambs..... | 1,049,935 | 142,045 | 907,890 | 86.5 | 65,465 | 273,360 | 569,065 |

- Entry represents zero.

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-25. MAJOR AGRICULTURAL EXPORT COMMODITIES: 1967*

(For Provinces and Northern Territory. Number of tons rounded to nearest hundred)

| Commodity | Amount exported (metric tons) | Value (dollars) | Commodity | Amount exported (metric tons) | Value (dollars) |
|---|---|---|---|---|---|
| Bananas..... | 48,200 | 2,905,000 | Rubber..... | 13,700 | 6,721,000 |
| Cocoa..... | 10,100 | 4,127,000 | Sesame..... | 4,800 | 253,000 |
| Copra..... | 18,500 | 3,019,000 | Sisal..... | 9,700 | 2,935,000 |
| Coffee..... | 48,900 | 40,270,000 | Sugar..... | 93,600 | 12,118,000 |
| Cotton (lint)..... | 52,400 | 42,411,000 | Tea..... | 6,800 | 5,809,000 |
| Groundnuts (peanuts)..... | 66,600 | 19,798,000 | Tobacco..... | 12,400 | 16,439,000 |
| Maize..... | 473,800 | 28,406,000 | Beef and veal..... | 73,700 | 49,988,000 |
| Pineapples..... | 5,600 | 225,000 | Skins..... | 17,500 | 4,837,000 |
| Rice..... | 124,900 | 7,512,000 | Wool..... | 2,400 | 5,212,000 |

Source: Export-import records of the Ministry of Commerce and Labor.

*Exhibit I-2-26. TENURE OF AGRICULTURAL HOLDINGS, BY SIZE OF HOLDING: 1961*

(Excludes Northern Territory. Number of holdings rounded to nearest hundred)

| Size of holding (hectares) | Number | | | | | Percent | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Full owner | Owner-tenant | Manager | Tenant[1] | Total | Full owner | Owner-tenant | Manager | Tenant[1] |
| Total holdings.. | 806,400 | 503,200 | 88,700 | 6,500 | 208,000 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 0.5 to 2.9..... | 248,000 | 165,300 | 1,100 | - | 81,600 | 30.8 | 32.9 | 1.2 | - | 39.2 |
| 3.0 to 4.9..... | 185,500 | 127,500 | 3,500 | - | 54,400 | 23.0 | 25.3 | 4.0 | 0.3 | 26.1 |
| 5.0 to 9.9..... | 156,300 | 102,200 | 13,700 | - | 40,300 | 19.4 | 20.3 | 15.5 | 0.5 | 19.4 |
| 10.0 to 19.9..... | 106,700 | 48,900 | 29,900 | 100 | 27,900 | 13.2 | 9.7 | 33.7 | 0.9 | 13.4 |
| 20.0 to 49.9..... | 56,000 | 30,100 | 22,000 | 200 | 3,700 | 7.0 | 6.0 | 24.8 | 3.7 | 1.8 |
| 50.0 to 499.9..... | 50,300 | 28,400 | 18,300 | 3,500 | 100 | 6.2 | 5.6 | 20.6 | 54.5 | 0.1 |
| 500.0 or more..... | 3,600 | 800 | 200 | 2,600 | - | 0.4 | 0.2 | 0.2 | 40.1 | - |
| Average size..... | 25.2 | 15.7 | 48.8 | 905.8 | 10.7 | (X) | (X) | (X) | (X) | (X) |

- Entry represents zero or less than 50 holdings.
(X) Not applicable.
[1] Includes renting for cash or share, squatter, rent-free.

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-27. LAND UTILIZATION OF AGRICULTURAL HOLDINGS, BY NUMBER AND AREA OF HOLDINGS: 1961*

(Excludes Northern Territory. Number of holdings and hectares rounded to nearest hundred)

| Land use | Number | | Percent | |
|---|---|---|---|---|
| | Holdings | Hectares | Holdings | Hectares |
| Total..... | 806,400 | 20,284,400 | 100.0 | 100.0 |
| Arable land..... | 699,100 | 4,649,300 | 86.7 | 22.9 |
| In temporary crops..... | 689,100 | 3,989,900 | 85.5 | 19.7 |
| In plowable pasture, idle or fallow, crop failure..... | 314,700 | 659,400 | 39.0 | 3.3 |
| Land in permanent crops..... | 204,400 | 457,100 | 25.4 | 2.3 |
| Permanent pasture or grazing land.. | 349,300 | 10,991,800 | 43.3 | 54.2 |
| Wood or forest land..... | 208,500 | 3,004,800 | 25.9 | 14.8 |
| Other land..... | 718,100 | 1,181,400 | 89.0 | 5.8 |

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-28. LAND UTILIZATION OF AGRICULTURAL HOLDINGS, BY SIZE OF HOLDING: 1961*

(Excludes Northern Territory. Number of hectares rounded to nearest hundred)

| Land use | Total | Size of holding (hectares) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0.5 to 2.9 | 3.0 to 4.9 | 5.0 to 9.9 | 10.0 to 19.9 | 20.0 to 49.9 | 50.0 to 99.9 | 100.0 to 499.9 | 500.0 or more |
| Total hectares..... | 20,284,400 | 379,900 | 712,900 | 1,078,100 | 1,458,600 | 1,710,600 | 1,453,500 | 6,000,900 | 7,489,900 |
| Arable land..... | 4,649,300 | 251,300 | 363,800 | 439,000 | 516,500 | 521,200 | 386,000 | 1,248,000 | 923,500 |
| In temporary crops..... | 3,989,900 | 238,500 | 339,900 | 401,400 | 468,100 | 466,400 | 340,200 | 1,073,600 | 661,800 |
| In plowable pasture, idle or fallow, crop failure.. | 659,400 | 12,800 | 23,900 | 37,600 | 48,400 | 54,800 | 45,800 | 174,400 | 261,700 |
| Land in permanent crops..... | 457,100 | 1,500 | 3,700 | 8,900 | 10,100 | 12,900 | 15,800 | 45,500 | 358,700 |
| Permanent pasture or grazing land..... | 10,991,800 | 33,300 | 96,200 | 309,500 | 412,000 | 611,000 | 508,400 | 3,458,100 | 5,563,300 |
| Wood or forest land..... | 3,004,800 | 31,200 | 103,500 | 208,600 | 310,900 | 410,000 | 401,700 | 1,009,200 | 529,700 |
| Other land..... | 1,181,400 | 62,600 | 145,700 | 112,100 | 209,100 | 155,500 | 141,600 | 240,100 | 114,700 |

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-29. LAND UTILIZATION OF AGRICULTURAL HOLDINGS, BY TENURE: 1961*

(Excludes Northern Territory. Number of hectares rounded to nearest hundred)

| Land use | Total | Full owner | Owner-tenant | Manager | Tenant[1] |
|---|---|---|---|---|---|
| Total hectares..... | 20,284,400 | 7,888,200 | 4,326,000 | 5,843,500 | 2,226,600 |
| Arable land..... | 4,649,300 | 2,115,400 | 967,000 | 897,300 | 669,500 |
| In temporary crops..... | 3,989,900 | 1,815,400 | 835,100 | 706,600 | 632,800 |
| In plowable pasture, idle or fallow, crop failure,..... | 659,400 | 300,000 | 131,900 | 190,700 | 36,700 |
| Land in permanent crops..... | 457,100 | 252,500 | 36,600 | 21,000 | 147,100 |
| Permanent pasture or grazing land.. | 10,991,800 | 2,850,200 | 2,733,500 | 1,240,900 | 4,167,300 |
| Wood or forest land..... | 3,004,800 | 2,125,100 | 263,600 | 140,300 | 475,800 |
| Other land..... | 1,181,400 | 545,000 | 325,600 | 154,900 | 156,000 |

[1] Includes renting for cash or share, squatter, rent-free.

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-30. CROP AREA IN HARVESTED TEMPORARY CROPS, BY PROVINCES: 1961*

(Number of hectares rounded to nearest hundred)

| Province | Total | Crop area in -- | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Wheat | Rice | Sorghum | Maize | Cotton | Beans | Peas |
| Total hectares.. | 4,964,300 | 429,100 | 591,800 | 368,000 | 1,380,400 | 437,600 | 697,300 | 193,600 |
| Bolivar..... | 137,400 | 71,700 | - | 24,900 | 19,100 | - | 6,200 | 4,500 |
| Dewar..... | 227,100 | 19,700 | 42,900 | 10,300 | 82,600 | - | 14,000 | 8,200 |
| DuBois..... | 518,000 | 10,700 | 24,600 | 27,800 | 136,600 | 133,600 | 57,100 | 27,500 |
| Hassam..... | 520,100 | - | 114,000 | 57,200 | 144,900 | 109,600 | 45,600 | 12,300 |
| Liberto..... | 328,900 | - | 3,000 | 2,200 | 105,900 | - | 129,100 | 18,000 |
| Lopez..... | 876,300 | 28,900 | 56,500 | 75,100 | 235,900 | 80,600 | 149,000 | 46,800 |
| Lo-San-Tho..... | 266,700 | 101,200 | 11,900 | 19,200 | 67,900 | - | 25,000 | 11,400 |
| Morgan..... | 313,000 | - | 11,500 | 1,400 | 107,500 | - | 107,100 | 23,700 |
| Paris..... | 224,000 | 102,900 | - | 33,300 | 45,500 | - | 12,100 | 5,300 |
| Rajpur..... | 645,400 | 74,900 | 59,500 | 101,200 | 142,800 | 113,800 | 67,200 | 19,400 |
| Rama..... | 181,600 | 16,000 | 31,300 | 9,600 | 65,700 | - | 13,000 | 8,600 |
| Tali..... | 559,800 | - | 202,900 | 1,800 | 176,200 | - | 54,200 | 4,600 |
| Valencia..... | 166,000 | 3,200 | 33,700 | 4,000 | 49,800 | - | 17,400 | 3,200 |

| | Crop area in -- | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Potatoes (white) | Manioc (cassava) | Sweet-potatoes | Sugarcane | Groundnuts (peanuts) | Tobacco | Vegetables for sale | Vegetables for home use | All other temporary crops |
| Total hectares.. | 93,800 | 29,300 | 62,700 | 86,000 | 248,000 | 20,500 | 53,000 | 173,400 | 100,000 |
| Bolivar..... | 2,200 | 200 | 600 | 100 | 1,000 | . | 500 | 3,500 | 2,900 |
| Dewar..... | 1,600 | 2,900 | 5,700 | 300 | 24,300 | 1,600 | 1,100 | 6,600 | 5,400 |
| DuBois..... | 6,800 | 1,400 | 3,300 | 1,000 | 52,300 | 3,400 | 4,900 | 14,300 | 12,600 |
| Hassam..... | 5,200 | 1,000 | 3,500 | 7,700 | - | 1,400 | 2,400 | 6,200 | 9,200 |
| Liberto..... | 12,900 | - | 2,900 | 1,000 | 26,700 | 700 | 3,200 | 18,000 | 5,100 |
| Lopez..... | 38,000 | 2,500 | 19,100 | 4,200 | 68,700 | 8,000 | 18,300 | 32,000 | 12,700 |
| Lo-San-Tho..... | 1,000 | 400 | 400 | 200 | 11,900 | - | 1,100 | 8,000 | 7,000 |
| Morgan..... | 13,600 | - | 2,500 | 900 | 19,900 | - | 4,300 | 14,900 | 5,600 |
| Paris..... | 3,500 | - | 1,800 | 200 | 400 | - | 1,700 | 8,500 | 8,700 |
| Rajpur..... | 6,200 | 800 | 3,100 | 14,700 | 2,200 | 1,400 | 3,300 | 20,500 | 14,300 |
| Rama..... | 600 | 4,200 | 7,500 | 700 | 11,100 | 1,000 | 2,000 | 6,400 | 3,900 |
| Tali..... | 1,700 | 9,900 | 5,600 | 54,500 | - | 2,200 | 9,500 | 28,400 | 8,300 |
| Valencia..... | 300 | 6,000 | 6,600 | 500 | 29,300 | 800 | 800 | 6,000 | 4,300 |

- Entry represents zero or less than 50 hectares.

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-31. NUMBER OF AGRICULTURAL HOLDINGS REPORTING MAJOR TEMPORARY CROPS, BY PROVINCES: 1961*

(Number of holdings rounded to nearest hundred)

| Province | All holdings | Wheat | | Rice | | Sorghum | | Maize | | Cotton | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number reporting | Percent | Number reporting | Percent | Number reporting | Percent | Number reporting | Percent | Number reporting | Percent |
| Total..... | 806,400 | 67,100 | 8.3 | 305,300 | 37.9 | 142,500 | 17.7 | 526,500 | 65.3 | 49,500 | 6.1 |
| Bolivar..... | 14,200 | 9,000 | 63.0 | - | - | 4,800 | 33.7 | 12,400 | 87.2 | - | - |
| Dewar..... | 29,200 | 1,000 | 3.3 | 16,200 | 55.4 | 5,700 | 19.6 | 20,700 | 70.9 | - | - |
| DuBois..... | 57,000 | 1,900 | 3.3 | 12,700 | 22.2 | 9,500 | 16.6 | 41,100 | 72.1 | 14,600 | 25.7 |
| Hassam..... | 24,600 | 100 | 0.6 | 14,100 | 57.5 | 17,000 | 69.0 | 20,300 | 82.3 | 11,500 | 46.8 |
| Liberto..... | 107,800 | 100 | 0.1 | 4,800 | 4.5 | 3,100 | 2.9 | 76,100 | 70.5 | - | - |
| Lopez..... | 181,200 | 12,200 | 6.7 | 89,500 | 49.4 | 50,900 | 28.1 | 103,000 | 56.8 | 13,300 | 7.3 |
| Lo-San-Tho..... | 31,300 | 13,300 | 42.3 | 3,700 | 11.8 | 6,100 | 19.6 | 14,500 | 46.2 | - | - |
| Morgan..... | 73,900 | 100 | 0.2 | 22,100 | 30.0 | 2,200 | 2.9 | 47,500 | 64.3 | - | - |
| Paris..... | 33,700 | 13,500 | 39.9 | - | - | 9,200 | 27.4 | 21,000 | 62.4 | - | - |
| Rajpur..... | 60,100 | 12,500 | 20.7 | 15,400 | 25.6 | 25,400 | 42.3 | 46,500 | 77.4 | 10,000 | 16.7 |
| Rama..... | 32,600 | 2,900 | 8.8 | 13,300 | 40.9 | 3,300 | 10.2 | 19,700 | 60.6 | - | - |
| Tali..... | 136,500 | - | - | 99,900 | 73.2 | 3,300 | 2.4 | 87,400 | 64.0 | - | - |
| Valencia..... | 24,100 | 700 | 3.0 | 13,500 | 55.8 | 1,800 | 7.6 | 16,300 | 67.6 | - | - |

- Entry represents zero or less than 50 holdings.

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-32. CROP AREA IN PERMANENT CROPS, BY PROVINCES: 1961*

(Number of hectares rounded to nearest hundred)

| Province | Total hectares | Crop area in-- | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oranges | Bananas | Pineapples | Coffee | Tea | Coconuts | Sisal | Rubber | Cocoa | Permanent grasses cut for hay | All other permanent crops |
| Total.... | 498,700 | 17,300 | 49,100 | 4,400 | 217,600 | 24,700 | 31,500 | 18,800 | 61,700 | 24,500 | 17,600 | 31,400 |
| Bolivar..... | 5,900 | 600 | - | - | - | - | - | 2,700 | - | - | 1,800 | 800 |
| Dewar..... | 29,900 | 1,000 | 1,500 | - | - | - | - | 2,900 | 12,100 | 9,800 | 1,200 | 1,300 |
| DuBois..... | 14,900 | 900 | 1,500 | - | 6,500 | 1,900 | - | - | - | - | 200 | 3,900 |
| Hassam..... | 39,600 | 3,600 | 9,700 | 1,700 | 10,000 | - | 10,100 | - | - | - | 200 | 4,300 |
| Liberto..... | 67,100 | 800 | 5,400 | - | 54,800 | 4,200 | - | - | - | - | 100 | 1,900 |
| Lopez..... | 88,300 | 1,100 | 10,100 | - | 62,500 | - | - | 6,400 | - | - | 2,900 | 5,400 |
| Lo-San-Tho... | 7,900 | 1,000 | - | - | - | - | - | 3,100 | - | - | 2,500 | 1,300 |
| Morgan..... | 102,000 | 1,900 | 4,100 | - | 76,400 | 17,300 | - | - | - | - | 500 | 1,800 |
| Paris..... | 7,400 | 900 | - | - | - | - | - | 3,800 | - | - | 1,300 | 1,400 |
| Rajpur..... | 34,000 | 4,400 | 5,500 | 1,700 | 4,000 | - | 12,800 | - | - | - | 3,000 | 2,600 |
| Rama..... | 17,300 | 600 | 1,400 | - | - | - | - | - | 5,000 | 8,900 | 700 | 700 |
| Tali..... | 60,400 | 200 | 7,800 | 1,000 | 3,400 | - | 8,600 | - | 29,500 | 4,600 | 1,000 | 4,300 |
| Valencia..... | 24,100 | 400 | 2,200 | - | - | 1,300 | - | - | 15,200 | 1,200 | 2,100 | 1,800 |

- Entry represents zero or less than 50 hectares.

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-33. LIVESTOCK AND POULTRY INVENTORY BY PROVINCES: 1961*

(Numbers rounded to nearest hundred)

| Province | All holdings | Cattle and calves | | | Sheep and lambs | | | Hogs and pigs | | | Goats and kids | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Holdings reporting | | Number of cattle and calves | Holdings reporting | | Number of sheep and lambs | Holdings reporting | | Number of hogs and pigs | Holdings reporting | | Number of goats and kids |
| | | Number | Percent | | Number | Percent | | Number | Percent | | Number | Percent | |
| Total..... | 806,400 | 326,000 | 40.4 | 4,594,500 | 50,000 | 6.2 | 1,049,900 | 378.200 | 46.9 | 1,437,100 | 64,500 | 8.0 | 400,900 |
| Bolivar..... | 14,200 | 7,300 | 51.2 | 145,200 | 4,300 | 30.0 | 225,100 | 5,100 | 36.1 | 26,000 | 400 | 3.0 | 1,000 |
| Dewar..... | 29,200 | 10,000 | 34.3 | 167,300 | 300 | 1.0 | 5,100 | 7,200 | 24.6 | 25,600 | 1,100 | 3.7 | 7,800 |
| DuBois..... | 57,000 | 14,400 | 25.3 | 401,700 | 200 | 0.4 | 2,000 | 27,900 | 48.9 | 110,500 | 4,000 | 6.9 | 24,000 |
| Hassam..... | 24,600 | 20,400 | 82.9 | 407,700 | 400 | 1.7 | 4,400 | 14,000 | 56.8 | 50,300 | 2,100 | 8.6 | 9,200 |
| Liberto..... | 107,800 | 19,700 | 18.2 | 104,800 | 3,100 | 2.8 | 35,100 | 55,700 | 51.7 | 136,800 | 14,200 | 13.1 | 70,400 |
| Lopez..... | 181,200 | 90,100 | 49.7 | 616,500 | 2,100 | 1.2 | 22,900 | 102,700 | 56.7 | 456,400 | 10,700 | 5.9 | 82,200 |
| Lo-San-Tho..... | 31,300 | 17,200 | 55.0 | 405,000 | 6,000 | 19.2 | 105,700 | 12,000 | 38.4 | 57,000 | 2,100 | 6.6 | 8,000 |
| Morgan..... | 73,900 | 17,100 | 23.2 | 112,200 | 4,000 | 5.4 | 62,600 | 34,500 | 46.6 | 138,900 | 12,200 | 16.5 | 105,900 |
| Paris..... | 33,700 | 16,300 | 48.4 | 380,600 | 12,000 | 35.7 | 260,200 | 12,000 | 35.6 | 50,300 | 1,200 | 3.6 | 3,400 |
| Rajpur..... | 60,100 | 35,400 | 58.9 | 1,041,200 | 17,200 | 28.7 | 319,500 | 20,700 | 34.5 | 127,000 | 900 | 1.5 | 7,100 |
| Rama..... | 32,600 | 12,100 | 37.0 | 197,100 | 100 | 0.4 | 6,100 | 9,400 | 28.8 | 31,000 | 2,800 | 8.7 | 25,700 |
| Tali..... | 136,500 | 52,300 | 38.3 | 350,100 | 100 | 0.1 | 800 | 71,600 | 52.4 | 210,900 | 9,800 | 7.2 | 45,500 |
| Valencia..... | 24,100 | 13,600 | 56.5 | 265,100 | 45 | 0.2 | 500 | 5,400 | 22.4 | 16,400 | 3,100 | 12.6 | 10,800 |

| Province | Horses | | | Mules | | | Asses | | | Chickens | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Holdings reporting | | Number of horses | Holdings reporting | | Number of mules | Holdings reporting | | Number of asses | Holdings reporting | | Number of chickens |
| | Number | Percent | | Number | Percent | | Number | Percent | | Number | Percent | |
| Total..... | 298,400 | 37.0 | 704,800 | 121,000 | 15.0 | 272,400 | 104,900 | 13.0 | 207,900 | 594,800 | 73.8 | 10,596,900 |
| Bolivar..... | 8,800 | 61.8 | 37,300 | 500 | 3.2 | 2,200 | 200 | 1.5 | 300 | 11,900 | 83.3 | 201,900 |
| Dewar..... | 20,200 | 69.2 | 44,200 | 7,000 | 24.0 | 21,900 | 5,000 | 17.1 | 11,500 | 21,100 | 72.1 | 391,600 |
| DuBois..... | 27,200 | 47.7 | 56,600 | 14,900 | 26.0 | 27,700 | 11,200 | 19.7 | 20,500 | 43,200 | 75.8 | 726,000 |
| Hassam..... | 13,500 | 54.7 | 36,500 | 8,000 | 32.6 | 17,000 | 4,700 | 19.0 | 11,500 | 23,000 | 93.4 | 824,700 |
| Liberto..... | 22,300 | 20.6 | 34,900 | 16,800 | 15.5 | 32,800 | 15,600 | 14.5 | 30,800 | 74,300 | 68.9 | 784,100 |
| Lopez..... | 39,200 | 21.6 | 84,400 | 26,500 | 14.6 | 58,800 | 26,400 | 14.6 | 51,200 | 136,700 | 75.5 | 2,578,000 |
| Lo-San-Tho..... | 17,900 | 57.2 | 60,500 | 1,800 | 5.9 | 6,700 | 900 | 2.7 | 1,400 | 22,200 | 71.0 | 480,700 |
| Morgan..... | 23,100 | 31.2 | 35,500 | 12,400 | 16.7 | 24,500 | 12,200 | 16.5 | 24,900 | 55,300 | 74.8 | 606,500 |
| Paris..... | 23,100 | 68.6 | 82,100 | 1,100 | 3.3 | 4,600 | 700 | 2.1 | 1,000 | 28,100 | 83.1 | 489,800 |
| Rajpur..... | 34,900 | 58.0 | 114,200 | 7,600 | 12.7 | 20,200 | 6,000 | 9.9 | 12,600 | 44,500 | 74.0 | 852,500 |
| Rama..... | 18,900 | 57.9 | 42,300 | 8,200 | 25.1 | 17,200 | 6,200 | 18.9 | 13,200 | 23,100 | 70.8 | 351,100 |
| Tali..... | 34,800 | 25.5 | 49,700 | 9,500 | 7.0 | 20,200 | 10,900 | 8.0 | 16,900 | 94,500 | 69.3 | 2,060,000 |
| Valencia..... | 14,600 | 60.4 | 26,800 | 6,800 | 28.1 | 18,700 | 5,000 | 20.7 | 12,200 | 17,100 | 70.7 | 250,000 |

Source: 1961 Sample Census of Agriculture for the Provinces.

*Exhibit I-2-34. POPULATION BY AGE AND SEX, URBAN AND RURAL: 1960*
(Excludes Northern Territory)

| Age (years) | Total | | | Urban | | | Rural | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total (000) | Male (000) | Female (000) | Total (000) | Male (000) | Female (000) | Total (000) | Male (000) | Female (000) |
| NUMBER | | | | | | | | | |
| Total | 7,087 | 3,459 | 3,629 | 1,848 | 983 | 865 | 5,239 | 2,475 | 2,764 |
| Under 1 year | 262 | 131 | 131 | 74 | 37 | 37 | 188 | 94 | 94 |
| 1 to 4 years | 928 | 467 | 462 | 275 | 132 | 144 | 653 | 335 | 318 |
| 5 to 9 years | 971 | 491 | 480 | 268 | 120 | 148 | 703 | 371 | 332 |
| 10 to 14 years | 737 | 370 | 367 | 189 | 92 | 96 | 549 | 278 | 271 |
| 15 to 19 years | 659 | 329 | 331 | 177 | 94 | 83 | 482 | 234 | 248 |
| 20 to 24 years | 567 | 277 | 290 | 203 | 108 | 95 | 364 | 169 | 195 |
| 25 to 34 years | 964 | 470 | 493 | 288 | 190 | 99 | 676 | 281 | 395 |
| 35 to 44 years | 780 | 384 | 396 | 179 | 105 | 74 | 600 | 279 | 322 |
| 45 to 54 years | 553 | 259 | 293 | 98 | 56 | 42 | 455 | 203 | 251 |
| 55 to 64 years | 354 | 156 | 199 | 50 | 27 | 23 | 304 | 129 | 175 |
| 65 to 74 years | 213 | 90 | 123 | 26 | 13 | 13 | 187 | 77 | 110 |
| 75 years and over | 99 | 35 | 65 | 20 | 9 | 11 | 79 | 26 | 53 |
| PERCENT | | | | | | | | | |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Under 1 year | 3.7 | 3.8 | 3.6 | 4.0 | 3.8 | 4.2 | 3.6 | 3.8 | 3.4 |
| 1 to 4 years | 13.1 | 13.5 | 12.7 | 14.9 | 13.4 | 16.6 | 12.5 | 13.5 | 11.5 |
| 5 to 9 years | 13.7 | 14.2 | 13.2 | 14.5 | 12.2 | 17.1 | 13.4 | 15.0 | 12.0 |
| 10 to 14 years | 10.4 | 10.7 | 10.1 | 10.2 | 9.4 | 11.1 | 10.5 | 11.2 | 9.8 |
| 15 to 19 years | 9.3 | 9.5 | 9.1 | 9.6 | 9.6 | 9.6 | 9.2 | 9.5 | 9.0 |
| 20 to 24 years | 8.0 | 8.0 | 8.0 | 11.0 | 11.0 | 11.0 | 6.9 | 6.8 | 7.1 |
| 25 to 34 years | 13.6 | 13.6 | 13.6 | 15.6 | 19.3 | 11.4 | 12.9 | 11.3 | 14.3 |
| 35 to 44 years | 11.0 | 11.1 | 10.9 | 9.7 | 10.7 | 8.6 | 11.5 | 11.3 | 11.6 |
| 45 to 54 years | 7.8 | 7.5 | 8.1 | 5.3 | 5.7 | 4.8 | 8.7 | 8.2 | 9.1 |
| 55 to 64 years | 5.0 | 4.5 | 5.5 | 2.7 | 2.7 | 2.7 | 5.8 | 5.2 | 6.3 |
| 65 to 74 years | 3.0 | 2.6 | 3.4 | 1.4 | 1.3 | 1.5 | 3.5 | 3.1 | 4.0 |
| 75 years and over | 1.4 | 1.0 | 1.8 | 1.1 | 0.9 | 1.3 | 1.5 | 1.0 | 1.9 |

Source: 1960 Census of Population for the Provinces.

*Exhibit I-2-35. NUMBER OF PERSONS IN THE HOUSEHOLD, URBAN AND RURAL: 1960*

(Excludes Northern Territory)

| Number of persons | Total | | Urban | | Rural | |
|---|---|---|---|---|---|---|
| | Number (000) | Percent | Number (000) | Percent | Number (000) | Percent |
| All households | 1,346 | 100.0 | 393 | 100.0 | 953 | 100.0 |
| 1 person | 60 | 4.5 | 32 | 8.1 | 28 | 2.9 |
| 2 persons | 139 | 10.3 | 50 | 12.7 | 89 | 9.3 |
| 3 persons | 176 | 13.1 | 56 | 14.2 | 120 | 12.6 |
| 4 persons | 197 | 14.6 | 59 | 15.0 | 138 | 14.5 |
| 5 persons | 211 | 15.7 | 58 | 14.7 | 153 | 16.1 |
| 6 persons | 174 | 12.9 | 49 | 12.5 | 125 | 13.1 |
| 7 persons | 139 | 10.3 | 36 | 9.2 | 103 | 10.8 |
| 8 persons | 84 | 6.2 | 21 | 5.3 | 63 | 6.6 |
| 9 persons | 70 | 5.2 | 15 | 3.8 | 55 | 5.8 |
| 10 or more | 96 | 7.1 | 17 | 4.3 | 79 | 8.3 |
| Median | 5.0 | (X) | 4.5 | (X) | 5.2 | (X) |

(X) Not applicable.

[1]By definition, a household consists of all the persons who occupy a housing unit; the count of households, therefore, is equal to the count of occupied housing units.

Source: 1960 Census of Population for the Provinces.

*Exhibit I-2-36. BIRTHS AND DEATHS DURING THE YEAR AND NUMBER PER 1,000 POPULATION: 1967*

| Subject | Number |
|---|---|
| BIRTHS | |
| Total live births in 1967 | 326,710 |
| Per 1,000 population | 46.0 |
| Per 1,000 women 15 to 44 years of age | 216.0 |
| DEATHS | |
| Total deaths in 1967 | 91,540 |
| Per 1,000 population | 13.0 |
| Deaths of children under 1 year of age | 23,850 |
| Per 1,000 live births | 73.0 |

Source: Number of births and deaths compiled from civil registration records; not adjusted for underregistration. Population estimated.

*Exhibit I-2-37. LITERACY OF THE POPULATION 15 YEARS OLD AND OVER, BY SEX, URBAN AND RURAL: 1960*
(Excludes Northern Territory)

| | Total | | Urban | | Rural | |
|---|---|---|---|---|---|---|
| | Number (000) | Percent | Number (000) | Percent | Number (000) | Percent |
| Population 15 years old and over..... | 4,189 | 100.0 | 1,042 | 100.0 | 3,147 | 100.0 |
| Literate..... | 1,979 | 47.2 | 827 | 79.4 | 1,152 | 36.6 |
| Male..... | 1,152 | 27.5 | 441 | 42.3 | 711 | 22.6 |
| Female..... | 827 | 19.7 | 386 | 37.1 | 441 | 14.0 |
| Illiterate..... | 2,210 | 52.8 | 215 | 20.6 | 1,995 | 63.4 |
| Male..... | 848 | 20.2 | 161 | 15.5 | 687 | 21.8 |
| Female..... | 1,362 | 32.5 | 54 | 5.2 | 1,308 | 41.6 |

Source: 1960 Census of Population for the Provinces.

*Exhibit I-2-38. SCHOOL ATTENDANCE OF PERSONS 5 TO 24 YEARS OLD, URBAN AND RURAL: 1960*
(Excludes Northern Territory)

| | Total | | Urban | | Rural | |
|---|---|---|---|---|---|---|
| | Number (000) | Percent | Number (000) | Percent | Number (000) | Percent |
| Population 5 to 24 years old..... | 2,934 | 100.0 | 837 | 100.0 | 2,097 | 100.0 |
| Attending school..... | 1,252 | 42.7 | 631 | 75.4 | 621 | 29.6 |
| 5 years old..... | 76 | 2.6 | 34 | 4.1 | 42 | 2.0 |
| 6 years old..... | 99 | 3.4 | 36 | 4.3 | 63 | 3.0 |
| 7 to 9 years old..... | 383 | 13.1 | 161 | 19.2 | 222 | 10.6 |
| 10 to 11 years old..... | 204 | 7.0 | 95 | 11.4 | 109 | 5.2 |
| 12 to 13 years old..... | 171 | 5.8 | 85 | 10.2 | 86 | 4.1 |
| 14 to 15 years old..... | 124 | 4.2 | 75 | 9.0 | 49 | 2.3 |
| 16 to 17 years old..... | 91 | 3.1 | 64 | 7.6 | 27 | 1.3 |
| 18 to 19 years old..... | 51 | 1.7 | 32 | 3.8 | 19 | 0.9 |
| 20 to 21 years old..... | 33 | 1.1 | 31 | 3.7 | 2 | 0.1 |
| 22 to 24 years old..... | 20 | .7 | 18 | 2.1 | 2 | 0.1 |
| Not attending..... | 1,682 | 57.3 | 206 | 24.6 | 1,476 | 70.4 |

Source: 1960 Census of Population for the Provinces.

*Exhibit I-2-39. ECONOMIC ACTIVITY STATUS OF THE POPULATION 12 YEARS OLD AND OVER, BY SEX: 1960*

(Excludes Northern Territory)

| Activity status | Total | | Male | | Female | |
|---|---|---|---|---|---|---|
| | Number (000) | Percent | Number (000) | Percent | Number (000) | Percent |
| Population 12 years old and over | 4,631 | 100.0 | 2,221 | 100.0 | 2,410 | 100.0 |
| Economically active | 2,566 | 55.4 | 1,826 | 82.2 | 740 | 30.7 |
| Not economically active | 2,065 | 44.6 | 395 | 17.8 | 1,670 | 69.3 |
| Economically active | 2,566 | 100.0 | 1,826 | 100.0 | 740 | 100.0 |
| Employed | 2,352 | 91.7 | 1,691 | 92.6 | 661 | 89.3 |
| Employee | 944 | 36.8 | 553 | 30.3 | 391 | 52.9 |
| Employer | 107 | 4.2 | 102 | 5.6 | 5 | 0.7 |
| Own account worker | 887 | 34.6 | 881 | 48.2 | 6 | 0.8 |
| Unpaid family worker | 414 | 16.1 | 156 | 8.5 | 258 | 34.9 |
| Unemployed | 214 | 8.3 | 134 | 7.4 | 79 | 10.7 |
| Not economically active | 2,065 | 100.0 | 395 | 100.0 | 1,670 | 100.0 |
| Homemakers | 1,265 | 61.3 | 2 | 0.6 | 1,263 | 75.7 |
| Students | 490 | 23.7 | 265 | 67.1 | 225 | 13.5 |
| Inmates | 14 | 0.7 | 9 | 2.3 | 5 | 0.3 |
| Other | 296 | 14.3 | 119 | 30.0 | 177 | 10.6 |

Source: 1960 Census of Population for the Provinces.

*Exhibit I-2-40. MAJOR OCCUPATION AND INDUSTRY GROUPS FOR THE ECONOMICALLY ACTIVE POPULATION, BY SEX: 1960*

(Excludes Northern Territory)

| Occupation and industry group | Total | | Male | | Female | |
|---|---|---|---|---|---|---|
| | Number (000) | Percent | Number (000) | Percent | Number (000) | Percent |
| OCCUPATION | | | | | | |
| Economically active population | 2,566 | 100.0 | 1,826 | 100.0 | 740 | 100.0 |
| Professional, technical, and related workers | 45 | 1.7 | 37 | 2.0 | 8 | 1.1 |
| Managers, administrators, and officials | 94 | 3.6 | 88 | 4.8 | 6 | 0.8 |
| Clerical, office, and other workers in related occupations | 59 | 2.3 | 24 | 1.3 | 35 | 4.8 |
| Sales workers and persons in related occupations | 40 | 1.6 | 16 | 0.9 | 24 | 3.2 |
| Farmers, graziers, fishermen, hunters, lumbermen, and persons in related occupations | 1,504 | 58.6 | 1,125 | 61.6 | 380 | 51.3 |
| Miners, quarrymen, and persons in related occupations | 32 | 1.3 | 26 | 1.4 | 7 | 0.9 |
| Workers operating vehicles and in related occupations | 42 | 1.6 | 40 | 2.2 | 1 | 0.2 |
| Craftsmen and operatives in occupations relating to spinning, shoemaking, construction, etc. | 206 | 8.0 | 175 | 9.6 | 30 | 4.1 |
| Other craftsmen and operatives | 125 | 4.9 | 104 | 5.7 | 21 | 2.8 |
| Workers and laborers not elsewhere classified | 47 | 1.9 | 33 | 1.8 | 15 | 2.0 |
| Personal service and related workers | 275 | 10.7 | 110 | 6.0 | 166 | 22.4 |
| Other workers, not elsewhere classified and workers in unidentifiable or unspecified occupations | 97 | 3.8 | 49 | 2.7 | 47 | 6.4 |
| INDUSTRY | | | | | | |
| Economically active population | 2,566 | 100.0 | 1,826 | 100.0 | 740 | 100.0 |
| Agriculture | 1,521 | 59.3 | 1,134 | 62.1 | 387 | 52.3 |
| Mining | 38 | 1.5 | 29 | 1.6 | 9 | 1.2 |
| Industrial manufacturing | 388 | 15.1 | 261 | 14.3 | 127 | 17.2 |
| Construction | 68 | 2.7 | 68 | 3.7 | 1 | 0.1 |
| Electricity, gas, water, and sanitary services | 4 | 0.1 | 4 | 0.2 | - | - |
| Commerce | 151 | 5.9 | 124 | 6.8 | 27 | 3.6 |
| Transport, storage, and communication | 41 | 1.6 | 38 | 2.1 | 3 | 0.4 |
| Personal services | 321 | 12.5 | 148 | 8.1 | 173 | 23.4 |
| Industry not reported[1] | 33 | 1.3 | 20 | 1.1 | 13 | 1.8 |

- Entry represents zero or less than 500 persons.

[1]Includes a small number of unemployed persons who have never worked.

Source: 1960 Census of Population for the Provinces.

*Exhibit I-2-41. CHARACTERISTICS OF OCCUPIED HOUSING UNITS: 1960*
(Excludes Northern Territory)

| Subject | Total | | Urban | | Rural | |
|---|---|---|---|---|---|---|
| | Number (000) | Percent | Number (000) | Percent | Number (000) | Percent |
| Occupied housing units | 1,346 | 100.0 | 393 | 100.0 | 953 | 100.0 |
| TENURE | | | | | | |
| Owner occupied | 737 | 54.7 | 178 | 45.2 | 559 | 58.6 |
| Renter occupied | 355 | 26.4 | 209 | 53.1 | 146 | 15.3 |
| Other | 254 | 18.9 | 6 | 1.7 | 248 | 26.0 |
| NUMBER OF ROOMS | | | | | | |
| 1 room | 143 | 10.6 | 67 | 17.1 | 76 | 8.0 |
| 2 rooms | 338 | 25.1 | 111 | 28.3 | 227 | 23.9 |
| 3 rooms | 345 | 25.6 | 85 | 21.6 | 260 | 27.3 |
| 4 rooms | 209 | 15.5 | 50 | 12.6 | 159 | 16.7 |
| 5 and 6 rooms | 192 | 14.3 | 42 | 10.7 | 150 | 15.7 |
| 7 rooms or more | 119 | 8.8 | 38 | 9.7 | 81 | 8.5 |
| Median | 3.1 | (X) | 2.7 | (X) | 3.2 | (X) |
| WATER SUPPLY | | | | | | |
| With running water | 334 | 24.8 | 213 | 54.3 | 121 | 12.7 |
| No running water | 1,012 | 75.2 | 180 | 45.7 | 832 | 87.3 |
| TOILET FACILITIES | | | | | | |
| Flush toilet | 257 | 19.1 | 180 | 45.8 | 77 | 8.1 |
| Other | 969 | 72.0 | 185 | 47.0 | 784 | 82.3 |
| None | 120 | 8.9 | 28 | 7.2 | 92 | 9.6 |
| ELECTRIC LIGHTING | | | | | | |
| With electric lighting | 305 | 22.7 | 205 | 52.2 | 100 | 10.5 |
| No electric lighting | 1,041 | 77.3 | 188 | 47.8 | 853 | 89.5 |
| RADIO SETS | | | | | | |
| With radio | 355 | 26.4 | 180 | 45.8 | 175 | 18.4 |
| No radio | 991 | 73.6 | 213 | 54.2 | 778 | 81.6 |
| TELEVISION SETS | | | | | | |
| With television | 106 | 7.9 | 67 | 17.0 | 39 | 4.1 |
| No television | 1,240 | 92.1 | 326 | 83.0 | 914 | 95.9 |

(X) Not applicable.

Source: 1960 Census of Population (and Housing) for the Provinces.

*Exhibit I-3-1. STRUCTURE OF GOVERNMENT--NATIONAL, PROVINCIAL, TERRITORIAL*

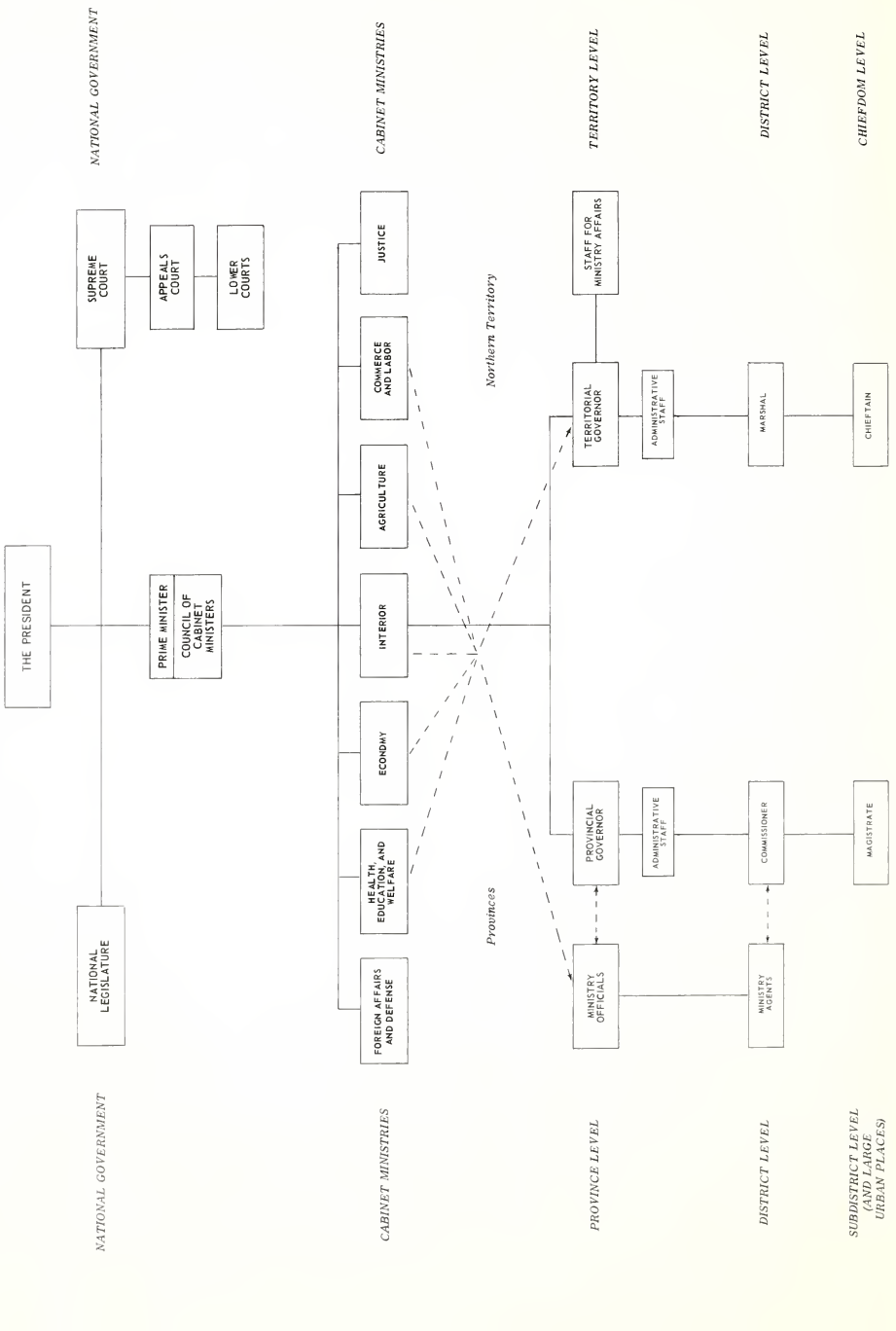


*Exhibit 1-3-2. ORGANIZATION OF THE NATIONAL STATISTICAL OFFICE FOR THE 1970 CENSUS PROGRAM*